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A COURSE OF STUDY FOR THE PREPARATION OF RURAL SCHOOL TEACHERS

NATURE STUDY, ELEMENTARY AGRICULTURE, SANITARY SCIENCE, AND APPLIED CHEMISTRY

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DEPARTMENT OF THE INTERIOR

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LETTER OF TRANSMITTAL.

Department of the Interior,
Bureau of Education,
Washington, D. C., January 6, 1912.

Sir: A very important problem of popular education to-day is the better adaptation of the work of the rural schools to the needs of rural life. The schools must make the people more intelligent in regard to the life they are to live. Both for culture and practical utility the course of study in these schools should conform more closely to the environment of the child and the future work of the man. This can be brought about only by teachers educated and trained for the task. *"A course of study for the preparation of rural school teachers in nature study, elementary agriculture, sanitary science, and applied chemistry,"* which has been prepared by Dr. Fred Mutchler and Mr. W. J. Craig, of the Department of Science in the Western Kentucky State Normal School, is a valuable contribution toward the solution of this problem and can not fail to be very helpful to officers and teachers in normal schools and other schools in which teachers are trained. I therefore recommend its publication as a bulletin of the Bureau of Education.

Very respectfully, P. P. Claxton,
Commissioner.

The Secretary of the Interior.

A COURSE OF STUDY FOR THE PREPARATION OF RURAL SCHOOL TEACHERS.

NEED OF SPECIAL TRAINING FOR TEACHERS OF RURAL SCHOOLS.

The part of our educational system that has received least attention in the immediate past is the rural school. Much good work has been and is now being done in the reorganization of courses of study, in training teachers, in planning for material equipment, and all the various details that help make an efficient school system. While these efforts have been well directed and are in large measure being carried out, they have nevertheless been inadequate for reviving the rural school. There is still lethargy among its patrons, still in far too many instances a deplorable retirement of pupils at an early age from the country school, still a very low attendance, still a lack of school spirit in the rural community, and still a vast amount of teaching which, though ever so well done, misses the high mark of its influence. The rural school has not the influence that it should have. One of the chief reasons lies in the fact that the course of study is ill-adapted to rural life in all of its relations. We are united in believing that a school should train its pupils for life and its work while these pupils are living and working. The course of study taught in the rural school to-day is entirely too much like the course that is taught in the city school; in fact it has been modeled to fit the needs of the latter without consulting enough the ends that are to be attained in the former.

Rural interests and rural problems are not like the city's interests and its problems; and educators everywhere, especially in the South, are coming more and more to believe that the course of study adapted to securing the most efficient rural life is radically different from any other course of study. The elementary school must, if it fulfills its high purpose, minister to the needs of the community in which it resides. To do this a course of study coordinated with rural life is needed, together with a corps of teachers trained to put in operation the work that the country districts need.

It is not within our purpose to make a study of rural interests and conditions or to outline a course of study for the rural schools, but to suggest some of the lines along which the teacher should be trained who essays to teach in the country district. It is not necessary to argue whether this training should be different from that of any other school. That fact is now generally admitted, because the problems to be solved and the interests to be encouraged, developed, and ministered unto are different from those in any other phase of elementary education. The country school will not reach the position of efficiency that belongs to it until a distinctive training is required of its teacher.

This distinctive training should give the teacher the power to answer the call of the rural community and the interests of country life will determine what should be emphasized in the country school and consequently what should be emphasized most in the rural teacher's special preparation. The country district is first of all and above all a place where the practical in education is needed, and one of the chief aims of the rural school should be the development of thrift. Thrift has always been and always will be a fundamental factor in progress, whether of the individual or of the community at large. Better homes and better household economy in every respect; better live stock and better barns; better crops and better use of them; the maintenance of the productivity of the soil and the reclamation of worn-out fields; better roads and better vehicles of travel; more good books, papers, magazines, art, and music for the boys and girls; better social conditions—these are the urgent needs of country life to-day, and they are most worthy because they all contribute so much to a happy and a useful life. Shall not the rural schools minister to these needs? And shall not the rural school teacher's training be such as to prepare him for teaching in a school whose major work is concerned with the solution of these problems? Can we do better at this time than to train the pupils of the country districts to make the most of the conditions that surround them by showing in a very definite and practical way the opportunities for a noble life that lie within their reach? Real progress can not be made without thrift. The rural teacher's preparation should not be wanting in the elements that equip him for serving this need.

POINT OF VIEW OF A STATE NORMAL SCHOOL.[1]

For the purpose of making more generally understood the proper attitude of such an institution toward the problem of elementary rural education, the following discussion and statement of work is presented. The aim of this course, it will be readily understood, is to increase the efficiency of the rural teacher.

A State normal school should prepare a large number of teachers to go out into the rural communities, there to be potent factors in bringing about the best possible rural life. The rural child is entitled to a course of study and to a course of instruction that will dignify and enrich his life and make life for him in the rural environment, should he choose to remain there, not simply tolerable, but glorious. Unfortunately, teachers everywhere, with rare exceptions, have idealized city life and unwittingly have been potent factors in inducing young men and women to leave the farm and move into the city. This movement often carries some of the best blood and brain of the community into the city, often to be lost, wasted, or destroyed; certainly to be lost from the rural community. It is possible and right, indeed a duty, to dignify rural life and to save to it and its interests the best blood of the country.

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[1] The course and methods described herein are largely those of the Western Kentucky State Normal School, Bowling Green, Ky.

Since there are common interests between rural and city peoples, the courses of study in their schools and the instruction should have certain elements in common, but there are important differences in industries and in environment. Corresponding to these differences, there should be a difference in instruction, and in this difference the adjustment should be so devised as to make the school contribute most to the needs of rural life.

To prepare teachers who can meet this demand, the following course of study and training is proposed: The first year is largely given to distinctively rural problems and interests, the two succeeding years turn more toward general scholarship, in order that those taking the entire course may be able not only to teach rural schools, but to enter larger fields of usefulness.

PREPARATORY COURSE.

The subjects of this course are arranged especially for students coming from the rural schools and from the grades, and for those who have not taught. Likewise, many who have taught will find it necessary to take some of the subjects in this course before they can carry the work of the elementary course successfully. While it is desirable to have all of the preparatory course completed before beginning the elementary course, one can complete several subjects in the elementary while finishing the work in the preparatory course. The subjects suggested for the preparatory course are as follows:

Arithmetic.
Reading and spelling.
Grammar.
Geography.
Penmanship.
Physiology.
Nature study.
Theory and practice.
Civil government.
Elementary history.
State history.
General observation.

ELEMENTARY COURSE.

Students who have completed all of the work of the preparatory course and of the elementary course, and are not deficient in qualifications relating to personality, habits, and character, may be granted certificates entitling them to teach in any rural or town school.

The certificate should not be granted for less than 26 weeks of resident work. The subjects for this course should be as follows:

Physiology and sanitary science.
Grammar.
Arithmetic.
Psychology.
Music.
Forensics.
English (farm themes).
Pedagogy.
Chemistry of farm and kitchen.
Manual arts or domestic economy.
English.
History.
Observation.
Physical geography.
Drawing.
Agriculture.
Rural life problems.

COURSE FOR RURAL TEACHERS.

It is now quite generally conceded that the following subjects are necessary for the proper training of rural school teachers: Nature study, elementary principles of practical agriculture, sanitary science and hygiene, domestic economy, and practical principles and problems in elementary chemistry and physics as applied in the study of these subjects. The teacher should be required to have a working knowledge of these subjects. The formal training of most country boys and girls ends with the rural school course. A fundamental knowledge of the foregoing subjects is certainly a minimum to require of the teacher who trains them for the lives that they must lead.

In the outlines which follow the topics are given with considerable detail in order to indicate what in our opinion should be incorporated in the elementary rural-school course in so far as pertains to these subjects. It is believed that teachers trained in this work will be much better prepared to do such work in rural schools, and that those schools will show a measure of efficiency that has never yet been generally attained.

NATURE STUDY.

As a starting point for the practical work in the rural school, nature study offers a very rich field, probably the best within our reach at this time. The science of living things is boundless, and life is all too short to comprehend any great part of it. No one can, however, go very far in his experience without realizing that as a living being he must cope with many other living forms, some of which are his enemies and others his friends; that some are his constant helpers, and others equally strong are constantly opposed to him; that some are making his life a pleasure and that others are tending to make it drudgery; that living things are "forces in nature" either for good or for evil, and that in order to make the most of life it is necessary to know what these living things are doing in order that a proper attitude toward each may be taken. It is the aim of nature study to reveal those living things that influence human life most. "Nature study is learning those things in nature that are best worth knowing to the end of doing those things that make life most worth the living." (Hodge.)

It is not the idea that we shall teach all things in nature, nor that all things are of importance if taught, nor that anything that is well taught is as valuable as any other thing. As a matter of fact, many things are taught that are not worth the effort or the time required to learn them. Only weariness and discouragement come from teaching such facts, and only indifference results on the part of the learner. But there are some things that every rural school teacher should see that his pupils learn, because of their importance in shaping the conditions of rural life. The following outline of a course of study is suggested for the preparation of the teacher to teach these important things. This course is intended to lay the foundation for the work in agriculture, both in the teacher's preparation and in the work of the country schools. In the latter the proper place for nature study is in the early grades, probably through the fifth or sixth, when practical agriculture should begin.

OUTLINE OF A COURSE IN NATURE STUDY.

PURPOSE AND POINT OF VIEW.

I. To give first-hand knowledge of nature.
II. To learn the useful and harmful in nature.
III. To establish permanent helpful life relations.
IV. To form a basis for work in agriculture.

SUBJECT MATTER.

I.—Bird life (*the problem of establishing life relations*).

1. List of helpful birds in the community. Why helpful?
2. List of harmful birds in the community. Why harmful?
3. List of nonmigratory birds.
4. List of game birds.
5. Study of State game laws.
6. General habits of birds: (*a*) Nest and nesting materials; (*b*) incubation period (observation); (*c*) migration; (*d*) notes.
7. Food and feeding tests: (*a*) Proportion of animal and vegetable food; (*b*) proportion of insect pests and noxious weed seeds in food; (*c*) groups of students (not over four in number) are asked to watch the parent birds feed their young for twelve consecutive hours, keeping a careful record of the number of feedings, and in so far as possible determining what things are fed, whether animal or vegetable matter. The following is a report made by two students of the Western State Normal School during the summer term of 1911. It is reproduced here exactly as it was handed in.

OBSERVATIONS OF A BIRD'S NEST.

July 10, 1911.

1. Length of observation.—12 hours.
2. Kind of bird.—Cat bird.[1]
3. Number of young birds in the nest.—Four.
4. Number of feedings given the young ones in 12 hours:

First hour (6 to 7 a. m.)	9 feedings.
Second hour (7 to 8 a. m.)	23 feedings.
Third hour (8 to 9 a. m.)	22 feedings.
Fourth hour (9 to 10 a. m.)	18 feedings.
Fifth hour (10 to 11 a. m.)	[2]11 feedings.
Sixth hour (11 a. m. to 12 m.)	16 feedings.
Seventh hour (12 m. to 1 p. m.)	[3]12 feedings.
Eighth hour (1 to 2 p. m.)	12 feedings.
Ninth hour (2 to 3 p. m.)	20 feedings.
Tenth hour (3 to 4 p. m.)	20 feedings.
Eleventh hour (4 to 5 p. m.)	30 feedings.
Twelfth hour (5 to 6 p. m.)	21 feedings.
Total	214 feedings.

REMARKS.—All of the food was gathered in sight of the nest; and it seemed to consist of ants, crickets, grasshoppers, cabbage worms, plant lice, etc.; two, three, or four insects were often gathered at a time.

8. Enemies of birds and their control: (a) Snakes; (b) English sparrows; (c) cats;[4] (d) hunters. What constitutes legitimate sport?

9. Protection: (a) Boxes; (b) feeding; (c) community sentiment; (d) control of enemies; (e) bird census.

10. Value of birds to community life, based on the results of feeding tests: In order to get an adequate idea of the value of a bird's nest to the community the following computation based on the above report is suggested. Suppose 100 of the insects fed the young in a day are cabbage worms, and they feed 10 days. A thousand have been destroyed. This, however, does not nearly give the results. Suppose these worms had been allowed to mature and become cabbage butterflies, each would have laid about 500 eggs, which would have hatched into half a million cabbage worms. One can hardly estimate the damaging powers of such an array of caterpillars. Half a dozen cat-birds' nests around the home are a power for good that can easily be underestimated.

11. Field study of birds in order to become acquainted with the common species under natural conditions.

II.—The insect problem.

1. Purpose of this study: (a) Chiefly economic (enemies and friends); (b) life story—(1) egg, (2) larva, (3) pupa, (4) adult; (c) beauty; (d) mechanism; (e) adaptations.

2. Insect pests: (a) Amount of damage done annually (U. S. Dept. of Agriculture reports); (b) list of most destructive insect pests in the community; (c) life histories of above insect pests; (d) natural enemies (birds, insects, insectivorous animals, etc.); (e) other means of control (importance of spraying); (f) common farm and garden insects—their life histories and control; list; (g) common insects injurious to fruit and fruit trees—(1) gnawing insects, (a) list, (b) arsenate of lead as a means of control, (c) Paris green, etc.; (2) sucking insects, (a) list, (b) kerosene emulsion, tobacco decoction, lime-sulphur as a means of control.

3. Beneficial insects: (a) How they are beneficial, and approximate value (estimate); (b) list of helpful insects and their life stories; (c) establishment of helpful life relations.

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[1] Period of incubation, 18 to 21 days; number of days that the young birds remain in the nest, 5 to 10.

[2] Old bird on the nest 30 minutes on account of rain.

[3] Bird on nest 15 minutes.

[4] In another course the cat is studied in relation to the health problem.

4. Insects injurious to health: (a) Flies—(1) life story, (2) breeding places, (3) relation to typhoid fever, (4) history of typhoid epidemic at Chickamauga, (5) foot as a germ carrier, (6) screens, (7) methods of extermination; (b) mosquitoes—(1) life story: Egg, larva, pupa, and adult, (2) breeding places, (3) relation to malaria and yellow fever, (4) history of yellow fever in Habana, (5) history of malaria and mosquitoes in Roman Campagna, (6) how they carry the germs of malaria and yellow fever, (7) preventive measures and methods of extermination.

5. Simple methods of preparing school insect collections.

6. Use of common moths and butterflies in the lower grades for studying life stories.

III.—Most important fungous pests.

1. Purpose of this study: (a) Economic importance; (b) life story.
2. List of fungous pests.[1]
3. Methods of control: (a) Lime, sulphur; (b) Bordeaux mixture; (c) the general problem of spraying (practical spray pumps and their approximate cost)—(1) its importance, (2) how and when to spray (the spray calendar), (3) comparative yield of sprayed and unsprayed crops.

IV.—Insectivorous animals.

1. Purpose of this study: (a) To find out what animal forms really do; (b) to establish helpful life relations.
2. List of insectivorous animals.
3. Food of insectivorous animals.
4. Life story of a few of the most common.
5. Value in dollars and cents to the rural community (estimated).
6. Which to encourage and which to destroy.

V.—Study of common shade and forest trees.

1. Value of a tree: (a) Economic; (b) aesthetic.
2. Trees best adapted for shade.
3. Planting about school and home.
4. Care of the trees.
5. List of species in the neighborhood.
6. Outdoor study of trees (know them in their native haunts).
7. General problem of forest preservation and reforestation.

VI.—The school garden.

1. Reasons for having a garden: (a) For practicing what has already been learned in the nature work; (b) for directed exercise and recreation; (c) for giving the pupil an opportunity to fall in love with a growing plant which he calls his own and which by his own efforts is made of most worth; (d) for the self-poise and moral fiber that come from a feeling of ownership, which is the best developer of a respect for the property rights of others.
2. Location of the garden.
3. Plan of the garden.
4. Things to plant in the garden (varies with the grade).
5. Preparation of the soil for planting.
6. Cultivation.
7. Tools.
8. General care of the garden.

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[1] The bacteria in relation to the health problem are treated in the course in sanitary science.

ELEMENTARY AGRICULTURE.

Agriculture is the chief industry of the Nation, and its progress depends largely upon our ability to develop more fully and better the agricultural possibilities of the country. Inadequate systems of farming and ill-adapted agricultural practices are to-day the rule. They should be the exceptions. There is general admission that the farmer's returns from his efforts are far less than they would be if proper scientific management and principles were applied in his work. The natural conditions of soil, rainfall, temperature, and season in the South are almost ideal for a great variety of crops, and with practical farm husbandry this section can excel in the production of many staple agricultural products. That we are not excelling, or in some instances even considered competitors in producing those crops in whose growth we should be leading, is brought out in every published report either State or National. As an example, take the yield of corn in Kentucky. In 1910 the average per acre was 29 bushels. While this compares very favorably with other Southern States, it is far short of our possibilities. There is not a New England State that did not average during the same year at least 40 bushels. On the whole our soil and climatic conditions are more favorable than those of New England. The reason that we come short of a much higher production must be in our system or rather the lack of any general practical system of farm management.

The application of a few practical principles of agricultural science, carefully demonstrated in each rural community, can not help giving marked improvement as a result. It is certainly not going too far to ask that the rural school give careful consideration and attention to this important problem. If handled in the right way by a skilled teacher with the necessary training, the mastery and application of the elementary practical principles and practices of agriculture can be made. Such work would very materially increase the aggregate returns from the farm. Take, for example, instruction in corn growing. The record following taken from a bulletin of the United States Department of Agriculture gives the results achieved by farmers' boys by the application of practical instructions in this work. The results are the best proof of the value of their teaching.

Records of State prize winners in growing corn in 1910.

Names and addresses.	Character of soil.	Yield.	Cost per bushel.
		Bushels.	*Cents.*
Hughey Harden, Banks, Ala	Sandy, clay subsoil	120	32
Ira Smith, Silver, Ark	Sandy loam	119	8
Joseph Stone, Center, Ga	Yellow clay	102¾	29
Stephen Henry, Melrose, La	Sandy	139¼	13.6
Wm. Williams, Decatur, Miss	Second bottom	146¼	18
Ernest Starnes, Hickory, N. C	Dark sandy loam	146⅞	27
Floyd Gayer, Tishomingo, Okla	Black sandy loam	95⅒	8
Jerry Moore, Winona, S. C	Gray, sandy upland	228¾	43
Maurice Olgers, Sutherland, Va	Gray upland	168	40
Norman Smith, Covington, Tenn	Sandy, clay subsoil	125½	37
Rodger Smith, Karnes City, Tex	Black river bottom	83¼	13⅓
Archie Odom, Bennettsville, S. C	Dark sandy loam	177	23
Jno. Williams, Tuscaloosa, Ala	Dark sand, clay beneath	83¾	49

Any schoolboy can equal the record of any of the above boys if he has an equal opportunity. All that is lacking is the dissemination of knowledge and the practical application of this knowledge to agriculture. This the rural school should do. Canada's rural schools increased the average wheat yield there 5 bushels to the acre in a few years' time. Suppose that our rural school teachers should set for themselves the problem of increasing the corn crop 5 bushels per acre, what would be the result? Let us see. In 1910 the farmers of Kentucky planted and cultivated 3,630,000 acres of corn, which yielded 105,270,000 bushels. An increase of 5 bushels per acre would have made the yield 18,500,000 bushels more. These 18,500,000 bushels of corn would have brought, at the average farm price December 1, 1910, approximately $10,000,000. This money would have gone directly to the rural communities, where it is much needed, and would have been of vast importance in solving the problems that confront our rural people. It could have been used to build 2,000 miles of first-class pike roads, or it would have paid the expenses of our public schools for two and a half years. It would have gone far toward paying the farmers' taxes, or it would have built and furnished many a rural home. Can anyone figure the comfort and happiness that 5 bushels more of corn per acre would buy for the rural people of any State?

What the rural schools can do for improving corn culture they can do for any other farm crop, if they adopt a rational course of study and demand teachers who can teach them effectively and efficiently. Fortunately, practical principles of agriculture are neither difficult to learn nor irksome to teach. The subject appeals to rural pupils because it comes within the scope of their immediate interests. Rural life can be wonderfully improved by the united efforts of teachers to promote real, genuine, uplifting thrift through instruction in the principles and practices of agriculture. To teach these principles the teacher must have had a thorough preparation in this special field. The course of study that follows is designed to give this preparation:

COURSE OF STUDY FOR TEACHERS OF AGRICULTURE.

I.—The plant (elementary study in relation to activities).

1. Parts: *a.* Roots and root hairs in relation to absorption of foods; *b.* stems—(1) character of each (annual, biennial, perennial), (2) uses and functions, (3) structure; *c.* leaves—(1) types, (2) structure; *d.* seed—(1) germination, (2) dispersal.

2. Constituents of plants and their characteristics: *a.* Organic; *b.* inorganic; *c.* organic and inorganic elements necessary to growth.

3. Source of plant foods and the way in which plants get them.

II.—The soil (in relation to plant growth).

1. Importance as a natural resource.

2. Principles to be mastered in order to understand the soil—geological, biological, chemical, physical.

3. Origin: Forces in nature that have produced soil—weathering, winds, water, heat and cold, etc.

4. Constituents: (*a*) Inorganic matter—(1) rock particles (body of soil), (2) chemicals (substances more or less soluble in water): (a) Lime, (b) nitrogen, (c) potash, (d) phosphoric acid. (Special study of each of these because they are most important. Mention need only be made of the long remaining list.) (*b*) Organic matter; life of soil; humus; plants and animals in a state of partial decay—(1) Importance: (a) Plant food and its availability, (b) moisture-holding capacity, (c) relation to temperature, (d) relation to physical condition, (e) relation to washing and leaching, (f) general problems of tilth, (g) origin of humus (barnyard manures, green manures).

5. Physical properties of soils: (a) Heavy soils, (b) light soils—experiments and demonstrations illustrating these properties; (c) water-holding capacity in relation to fineness; (d) effect of drying; (e) dust mulch.

6. Soil depletion: (a) Constituents that may be lost—(1) lime, (2) potash, (3) phosphoric acid, (4) nitrogen, (5) humus, (6) body; (b) amount of plant food removed from soil by various crops; (c) how constituents are lost—(1) washing, (2) leaching, (3) single cropping, (4) careless husbandry, (5) taking all off and putting nothing back.

7. Soil conservation and reclamation: (a) Importance (history of effects of loss of soil to agricultural purposes); (b) best means of preventing washing or leaching—(1) deep plowing and subsoiling, (2) cover crops, rye, wheat, winter oats, crimson clover, etc.; (c) best means of replacing humus—(1) barnyard manures, (2) green crops: (a) cowpeas, (b) soy beans, (c) clovers, (d) alfalfa; (d) best means of replacing mineral plant foods—(1) nitrogen: (a) leguminous crops (as above), fixation of nitrogen, (b) barnyard manures; (2) phosphoric acid, crushed rock phosphate, (3) potash (must be bought and put into soil), (4) lime: (a) use in agriculture, (b) caustic lime, (c) crushed limestone; (e) commercial fertilizers—(1) composition: (a) filler, (b) plant food—(1) nitrogen, (2) potash, (3) phosphoric acid; (c) uses of (a) and (b) (2) adaptation to soil and to crop, (3) guaranteed analysis, meaning and importance, (4) when it is profitable to use commercial fertilizers and when it is not, (5) price of the various plant foods in relation to the cost of commercial fertilizers, (6) use of nitrogen, potash, and phosphoric acid as a plant food, (7) effect of lime on soil: (a) physical, (b) availability of other plant foods, (c) humus, (d) sourness; (8) does it pay in the end to use commercial fertilizers? (f) rotation of crops—(1) value and importance, (2) various systems best adapted to soil, climate, and other conditions; (g) value of live stock in improving the farm; (h) careful and thoughtful husbandry of farm resources; (i) adaptation of crops to soil, climate, etc.; (j) work of animals in improving the soil.

8. Study of the various kinds of agricultural soils as to (a) components: Sand, silt, clay, humus; (b) physical properties; (c) plant food; (d) water-holding capacity; (e) endurance; (f) adaptation to various phases of agricultural pursuits.

III.—Preparation of the soil for seed.

1. Plowing: (a) Reasons for plowing; (b) depth; (c) time of plowing in relation to crop; (d) study of various types of plows; (e) subsoiling.
2. Pulverizing: (a) Relation to moisture, plant food, intertillage, etc.; (b) depth; (c) implements.
3. Intertillage: (a) Purpose; (b) effects of deep and of shallow cultivation; (c) dry farming and dust mulch.

IV.—Seed selection.

1. Importance in improving crops.
2. Methods and demonstrations of germination tests.
3. Importance of proper varieties.
4. Importance of selected strains in any variety.

V.—Study of the most common weeds and their seeds.

Best methods of their control.

VI.—Study of the most important field and forage crops.

Corn, wheat, oats, tobacco, cotton, potatoes, vegetables, small fruits, etc.—with the best methods for their profitable production.

VII.—Study of live stock as a farm resource.

1. Value of stock per se.
2. Value of stock in maintaining the fertility of the soil. (Manures.)
3. The dairy herd: (a) Types and breeds of dairy cattle (What is a good dairy cow?); (b) computing the ration; (c) the Babcock test; (d) value of manure and how to save most of it for the farm; (e) methods of applying manure to soil, and their relative values.
4. Beef cattle and their husbandry.
5. Other live stock and its importance, with a study of best types to meet conditions.
6. The stock barn: (a) Importance; (b) plans and specifications of various types most profitable in feeding stock; (c) location with reference to other buildings, drainage, convenience, water supply, etc.
7. Pastures; study of various grasses and other plants best suited for grazing, with directions for their easy propagation.
8. Feed stuff. Analysis in relation to result sought. (The balanced ration): (a) Corn; (b) hay, fodder, ensilage, peas, etc.; (c) cottonseed meal and hulls, etc.
9. Poultry: (a) Types and breeds; (b) care and management.

VIII.—The orchard.

1. Location in relation to—(a) slope; (b) drainage; (c) climatic conditions.
2. Soil. Study of kinds best adapted to various fruits.
3. Careful study of varieties of each fruit to find those best suited to locality.
4. Study of different kinds of trees, that the student may learn what a good nursery tree is.
5. Preparation of soil for planting the orchard: (a) Plowing and subsoiling; (b) pulverizing; (c) fertilizing.
6. Plan of the orchard.
7. How to properly plant a fruit tree.
8. Pruning.
9. Cultivation of orchard.
10. Study of principal insect and fungous pests of trees and fruits, with directions for their control. (Spraying and spraying outfits.)

IX.—The Corn Club.

The following directions are given after careful working out for the use of boys in competitive corn growing. (These may be modified to suit local conditions.)

DIRECTIONS FOR COMPETITIVE CORN GROWING.[1]

Breaking land.

Land, if sod, is to be plowed not less than 6 inches deep. All other land not less than 7 or 3 inches deep. (In both instances preferably deeper.)

Preparation for planting.

1. Harrow with drag harrow.
2. Double-disk both ways. (Use cultivator if you have no disk.)
3. Harrow with drag harrow again. (Repeat every 10 days or two weeks until planting time.)

Planting.

1. Check with planter 3 feet 8 inches each way.
2. If planter can not be used, lay off the ground 3 feet 8 inches each way, 3 inches deep with single-shovel plow, and cover by hand. If covered with drag, harrow immediately with tooth harrow. (No corn to be planted over 3 inches deep.)

Time of planting.

Depends upon local conditions, latitude, etc.

Cultivation.

1. Harrow 4 or 5 days after planting, if weather permits.
2. Cultivate with fine-tooth cultivator, if one is available, until corn becomes too large.
3. If no fine-tooth cultivator can be had and a disk cultivator is available, use it for first two cultivations; then use bull tongues.
4. If one-horse cultivation, use small harrow preferably, or double-shovel with bull tongues.
5. When corn is too large for two-horse cultivator, use a small harrow or drag between rows.
6. Cultivate each week until corn tassels.

Very important.

Never cultivate over 2 inches deep.
Never work in ground that is too wet.

Summary by the teacher of work and money spent by each boy in his work.

(This becomes a part of the teacher's records.)

In this square teacher may draw plat of corn lot, giving dimensions.

Division No..
Subdistrict No......................................
Name of boy..
Post office ....
1. Kind of land, bottom or high....................
2. Date of breaking ground..........................
3. Depth of breaking..........................inches.
4. Preparation for planting..........................
5. Date of planting.....................................
6. Width of rows....................................feet.
7. Drilled or checked? ....
8. Number of loads of stable manure..............
9. Was manure broadcast or in hill?...............
10. Kind and amount of fertilizer used..............
11. How used..
12. Kind of tools used in cultivation from first to last......................
13. How many times did he harrow before planting?........... After?...........
14. How many times did he roll the ground? ....
    Depth of cultivation...........
15. Did he get good stand? ....
    Why not?.......................................
16. Was growth of corn hindered in any way?......................... What way?..................
17. Did it rain enough?..................... Did it rain too much?.....................
18. What was the last work in cultivation?..........................
19. How large was corn when worked last?..........................
20. Could corn have been better?..................... What hindered or prevented?......................
21. How much land in his lot?......................acres. One patch or two?.....................

---

[1] This is the form used by the agricultural department of the Western Kentucky State Normal School.

22. Teacher will please take line 16½ feet long and measure the plat. Draw a diagram in the square above, giving dimensions.
23. How many measures of corn gathered from his lot? .... The measure to be a 5-bushel salt barrel.
24. The teacher will superintend the gathering of one patch, the trustees one, and a person selected by them the third. The barrel must be filled, then shaken well one time, then filled again level with the top. This is one measure.
25. Corn must be gathered on 4th of November.

Premiums were offered in this contest as follows: Greatest quantity of corn produced by one boy on his plot, $20 in gold; second greatest quantity, $10 in gold; third quantity, $5 in gold. For the best 10 ears exhibited at the corn show on State Normal Heights, November 18, 1911, $20 in gold; for second-best 10 ears, $10 in gold, and for the third-best ears, $5 in gold.

....
Teacher.

X.—Corn judging. (What is a good ear of corn?)
Characteristics of various varieties of corn.

Corn Score Card.[1]

Name of variety.................................
Class.. **Sample number**...

		1	2	3	4	5	6	7	8	9	10
Trueness to type	15										
Shape of ears	10										
Length of ears	10										
Circumference of ears	5										
Tips of ears	5										
Butts of ears	5										
Color of kernels and cobs	10										
Uniformity of kernels	10										
Shape of kernels	10										
Spacing of kernels	10										
Seed condition	10										
Total	100										

Remarks:

XI.—Farmers' day.

A day set apart for the assembling of all interested in better agriculture in the community.

Features of the day: (a) Corn-judging contest; (b) awarding of prizes in corn-growing contest; (c) exhibit of best 10 ears grown by each boy; (d) demonstration of Babcock milk test by pupils; (e) demonstration of cooking, sewing, etc.; (f) lecture by a prominent citizen or other practical agriculturist; (g) any practical features that help to make the school a center of rural uplift; (h) organization of club for ensuing year.

Demonstration work: (a) School farm, under scientific management; (b) plots for each individual student for the application of principles discussed in class and laboratory work.

SANITARY SCIENCE AND HEALTH.

The thing of first importance for anyone to know is "how to live and keep well." It follows, therefore, that the subject of health and hygiene should be of first consideration, for sanitary conditions at this stage of human development are far from what they should be. The following extracts from numerous reports on vital statistics need the attention of our schools. "In civil life in the United States there is an average of 1,500,000 deaths every year, with 4,200,000 constantly sick, involving the comfort and well-being of 5,000,000 homes and 25,000,000 people." Such a condition is appalling. At any given time more than one person in every four is suffering either in body or mind or both from sickness of some sort. Many political economists have made thorough study of this matter, and all agree that Dr. Irving Fisher is right in saying that more than one-third of this annual sick and death rate, representing a tax of inordinate proportions upon the resource of the Nation, is caused by diseases that could, with a little attention and instruction in the school, be effectually prevented. Is it not a primary duty of the school which claims to prepare teachers for useful work in any community to give instruction along the lines of rational prevention of disease? It is especially important that the teacher of a rural school be so trained, for in the community where his school is located the advantages and precautions ordinarily exercised by municipalities do not exist. As a concrete example of health conditions, take Kentucky, and see what the report of the State board of health shows:

---

[1] Form adopted by the Kentucky Agricultural Experiment Station.

	Cases.	Deaths.
Tuberculosis	13,436	6,541
Typhoid fever	18,387	1,818
Diphtheria	10,980	2,336
Diarrheal diseases among infants	18,240	1,642
Dysentery (adults)	19,624	840
Scarlet fever	1,800	160

From the monthly report of the bureau of vital statistics for the first eight months of 1911 we find that 50 deaths out of every 100 were unnecessary and could have been prevented. I do not believe that the conditions are any worse in Kentucky than they are in any other State. Great men in diplomacy and government have caused to be shaped into universal laws this truth: "The care of the public health is the first duty of every statesman."

If this be true, is it not the teacher's first obligation?

Wise legislators long ago incorporated into statutory law this mandate: "You shall teach physiology in the public school to the end that the individual and general health of the community may be made better thereby." Had they known the nature of our course of study to-day they would have assigned a different reason or left it out altogether. How we have plunged our pupils into a maze of technical detail from which few ever emerge. And if they do, how much better are the health conditions of the community made thereby? We teach them things that often the surgeon or doctor does not care to know. Surely the elementary teacher's preparation is sorely deficient if he does not know how to prevent "preventable diseases," or understand the common laws governing sanitary conditions, and has not the enthusiasm to teach this knowledge. The school that prepares him for his work should see to it that he gets both the academic training and the enthusiasm.

The following outline is intended to show those points in sanitary science that we think a rural school teacher should know in order to be able to do efficient work in this line:

COURSE IN SANITARY SCIENCE.

1. The health conditions in the community.
   (Study of reports of State board of health.)
2. List of preventable diseases most important to the people: (a) Tuberculosis; (b) typhoid; (c) diphtheria; (d) pneumonia; (e) diarrhœal diseases among infants; (f) dysentery among adults; (g) scarlet fever; (h) smallpox; (i) malaria; (j) hookworm disease.
3. Cause of the above and other diseases of their kind.
   (What is a preventable disease?)
4. Study of germ life, with emphasis on forms that produce disease: (a) Biological relations; (b) structure—size, shape, motion, method, and rate of growth, etc. (lantern-slide illustrations); (c) conditions favoring growth of disease germs (warmth, moisture, food, and absence of light); (d) aërobic and anaërobic germs; (e) carriers of germs; (f) how disease-producing germs get into the human system.
5. What constitutes insanitary conditions?
6. What constitutes sanitary conditions (lantern-slide illustrations)?
7. Typhoid fever as a type study: (a) General—(1) number of cases (indicating frequency of disease), (2) number of deaths (indicating mortality of the disease); (b) cause (typhoid germs taken in food or drink)—(1) insanitary conditions conducive to typhoid, (2) examples of typhoid epidemics and discussion of conditions that caused them ("Principles of Sanitary Science"—Sedgwick); (c) carriers of typhoid germs—(1) water, how infected? (2) milk, how infected? (3) other food, how infected? the house fly (see outline under nature study, p. 11), (4) typhoid carriers; (d) prevention—(1) drinking water, (2) drainage in relation to water supply and outbuildings, (3) milk, (4) destruction of flies, (5) screens.
8. Outlines similar to the above are followed in the study of tuberculosis, diphtheria, scarlet fever, malaria, etc.
9. Best convenient ways to secure sanitary drinking water.
10. Milk and its products, from the sanitary standpoint.
11. The problem of ventilation.
12. Location and construction of dwelling houses and barns with reference to healthfulness.
13. Practical ways of securing a good water supply for domestic use.
14. Sewage and sewage disposal.
15. The problem of foods and dietetics.
16. Fundamental principles of domestic and community hygiene.

PRACTICAL CHEMISTRY APPLIED TO RURAL LIFE.

The science of chemistry is intimately connected with all of those industrial arts so necessary to the comfort, health, and general welfare of mankind. So vital, indeed, is this connection with the ordinary problems of farm life, both in the home and in that out-of-doors, that any course of study which leads to a better training along the lines of successful home building and intelligent husbandry is incomplete without an elementary study, at least, of some of the more practical phases of the subject. This does not mean that chemistry as such is, or should be, any part of the course of study for the rural schools, but it is unquestionably true that such a course as is here outlined has a real place in the curriculum of any school that essays to prepare teachers for the richest and best service in the country schools. The teacher who would teach successfully the subjects of nature study and agriculture, or instruct efficiently in physiology from the sanitary and practical standpoint should know something of the chemistry of plant and animal life. Likewise instructors in domestic science should have more than a superficial knowledge of those elementary changes that lie at the bottom of any successful study of the problems of food, clothing, and cleanliness which mean so much to the success and happiness of the human race.

This course is planned to correlate with the courses in agriculture, nature study, and sanitary science herein given, and with any elementary course in domestic economy. The work should be given by a series of lectures with fitting illustrations, experiments, and references to standard works on the contained topics.

The aim of the work has been to approach the subject from the practical standpoint. But we believe that it is possible to give an elementary course in a practical way, and at the same time give real cultural value to the subject. Hoping that, in addition to the above aim, a completion of the course may lead the student to an appreciation of the broader fields of the subject, we offer the following:

COURSE IN CHEMISTRY FOR RURAL SCHOOL TEACHERS.

I.—General phases.

1. Properties of matter.
2. Change: (a) Physical; (b) chemical—(1) conditions, (2) aids; (c) laws of change.
3. Classification of substances: (a) Elements; (b) compounds; (c) mixtures.
4. States of matter: (a) Gases—(1) weight, (2) diffusion and pressure; (b) liquids; (c) solids; (d) changes of state; causes and effects.
5. Classification of compounds: (a) Acids—(1) organic, (2) inorganic, (3) neutralization of; (b) bases (alkalies); (c) salts; (d) neutrals.

II.—Air.

1. Physical properties.
2. Composition: (a) Nitrogen—(1) relation to plant life, (2) chief compounds; (b) oxygen—(1) relation to animal life, (2) combustion; condition, products, uses in nature and in the life of man; (c) miscellaneous material—Argon, water, carbon dioxide, etc.

III.—Water.

1. Properties—Chemical and physical.
2. Solvent: (a) Conditions; (b) amount possible.
3. Impurities: (a) Organic—test for; (b) inorganic—(1) lime, (2) magnesia, (3) potash, (4) iron, (5) chlorides, (6) sulphates; (c) hardness—causes and removal.

IV.—Soil.—General discussion only. (See outline of course in agriculture.)

V.—Carbon and its compounds.

1. Carbohydrates: (a) Cellulose—(1) composition, (2) properties, (3) occurrence, (4) uses in industrial life; (b) starch—(1) properties, (2) occurrence, (3) use, (4) tests, in plant life, in animal life, (5) analysis of potato; (c) sugar—(1) properties, (2) occurrence, (3) common kinds: cane, malt and milk, glucose.

2. Hydrocarbons: (a) Alcohols—kinds and uses; (b) acids; (c) fats.

3. Proteids—(organic nitrogen compounds): (a) Protein in milk (casein); (b) collagen—gelatin; (c) egg albumin; (d) legumin from peas and beans.

4. Milk: (a) Composition; (b) tests for adulterations; (c) percentage of butter fat (Babcock milk test); (d) products.

VI.—Chemistry of bread making.

1. Fermentation.

2. Yeast.

3. Simple chemical reactions: (a) Baking powder; (b) cream of tartar; (c) soda; (d) requirements under pure-food-law.

VII.—Chemistry of cleaning.

1. Cleaning agents: (a) Soap—(1) kinds, (2) process of making, (3) uses; (b) organic compounds; (c) acids.

2. Stains: (a) Kinds—(1) acid, (2) alkali, (3) iron rust, (4) mildew, scorch, etc.; (b) removal—general and specific directions.

3. Disinfectants, antiseptics, and deodorizers: (a) Natural—(1) sunlight, (2) dry air, (3) heat; (b) chemical—charcoal, lime, carbolic acid, mercuric chloride, peroxide of hydrogen, etc.

VIII.—Illumination and heat production.

1. The flame: (a) Conditions; (b) structural.

2. Illuminants and fuel: (a) Coal; (b) gas; (c) wood; (d) oil; (e) alcohol; (f) acetylene.

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MATHEMATICS AT WEST POINT AND ANNAPOLIS

INTERNATIONAL COMMISSION ON THE TEACHING
OF MATHEMATICS

THE AMERICAN REPORT

COMMITTEE No. XI

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THE AMERICAN REPORT

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MATHEMATICS AT WEST POINT AND ANNAPOLIS

GENERAL REPORT

Of all the technical schools in the United States, probably none exists whose aim is so clearly defined as that of our two great Government schools for the training of officers for the United States Army and Navy. The purpose of these schools is strictly utilitarian, viz, to give to a selected number of young men of this country the best possible technical training for the positions of responsibility in the Army and Navy. That these schools do their work well is amply demonstrated by the efficiency of our military and naval forces.

It is always of interest to see how a school fulfills its aim, how it adjusts its subject matter to meet the particular task in hand, and how it eliminates that which detracts from the main purpose. To teachers of mathematics such an investigation will be of particular interest, especially in view of the tendency of a number of modern educators to demand a justification of every topic in the curriculum. It is the purpose of the two reports submitted herewith to give such an exposition of the teaching of mathematics in these two great schools, the United States Military Academy at West Point and the United States Naval Academy at Annapolis, these being the only schools of the kind in the United States.

These reports will repay a careful reading; they are suggestive to all teachers not only in details of class organization, but in the general handling of subject matter to serve a definite purpose. They will also show why mathematics has so long held and still retains its prominent place in the training of military and naval officers.

To those who are familiar with similar schools abroad, it will be of great interest to compare the aims and results of instruction in mathematics in a famous Government school like the École Polytechnique[1] of Paris with those found in West Point and Annapolis. In the French school the greatest prominence is given to purely theoretical instruction in higher mathematics, with a very limited amount of practical application; in our two schools few topics are taught beyond the essentials of the calculus, and the practical problem is the basis and end of all the work.

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[1] The work of the École Polytechnique is described in the report of the French Committee (published by Hachette, Paris) of the International Commission on the Teaching of Mathematics.

REPORT OF SUBCOMMITTEE 1

MATHEMATICS IN THE TRAINING OF ARMY OFFICERS, INCLUDING SCHOOLS FOR GRADUATES OF WEST POINT

The training of Army officers is carried on in the following schools: (1) The Undergraduate school at West Point; (2) the Engineer School at Washington Barracks; (3) the Ordnance School at Sandy Hook, N. J.; and (4) the Coast Artillery School at Fort Monroe.

I. THE UNITED STATES MILITARY ACADEMY

HISTORICAL SKETCH

The United States Military Academy, established in 1802, is situated at West Point, N. Y. It is a school for the practical and theoretical training of cadets for the military service. The students of the academy are known as "cadets." Upon completing its course satisfactorily cadets are eligible for promotion and commission as second lieutenants in any branch of the military service of the United States. The Corps of Cadets as now constituted consists of 1 from each congressional district, 1 from each Territory, 1 from the District of Columbia, 1 from Porto Rico, 2 from each State at large, and 40 from the United States at large, all to be appointed by the President. Those cadets appointed from States or Territories must be actual residents of the congressional or Territorial districts, or of the District of Columbia, or of the States, respectively, from which they are appointed. Four Filipinos, one for each class, are authorized to receive instruction as cadets, to be eligible on graduation to commissions only in the Philippine Scouts. Under the apportionment of Members of Congress, according to the Twelfth Census, the maximum number of cadets is 533.

The total number of graduates from 1802 to 1909, inclusive, is 4,852.

ENTRANCE REQUIREMENTS

The United States Military Academy is the only school in the country that has for its sole object the furnishing of commissioned officers to the United States Army. From the method of selection of appointees referred to above, it is reasonable to believe that the Military Academy receives a more varied class of students and one more broadly representative of all the States than any other educational institution in the country, except the similarly constituted Naval Academy at Annapolis.

Entrance to the academy is by examination. The scope of the entrance requirements in mathematics is as follows:

Algebra.—Candidates will be required to pass a satisfactory examination in that portion of algebra which includes the following range of subjects: Definitions and notation; the fundamental laws; the fundamental operations; factoring; highest common factor; lowest common multiple; fractions, simple and complex; simple or linear equations with one unknown quantity; simultaneous simple or linear equations with two or more unknown quantities; involution, including the formation of the squares and cubes of polynomials; binomial theorem with positive integral exponents; evolution, including the extraction of the square and cube roots of polynomials and of numbers; theory of exponents; radicals, including reduction and fundamental operations, rationalization, and equations involving radicals; operations with imaginary numbers; quadratic equations; equations of quadratic form; simultaneous quadratic equations; ratio and proportion; arithmetic and geometric progressions. Candidates will be required to solve problems involving any of the principles or methods contained in the foregoing subjects.

Plane geometry.—Candidates will be required to give accurate definitions of the terms used in plane geometry, to demonstrate any proposition of plane geometry as given in the ordinary textbooks, and to solve simple geometric problems either by a construction or by an application of algebra.

These entrance examination papers are prepared at the academy. They are furnished to examining boards of Army officers convened annually at such places as the War Department may direct. The examinations are thus held at points widely distributed over the United States and its dependencies. All papers are sent to the Military Academy for correction.

DISTRIBUTION OF TIME

A cadet when admitted to the Military Academy must be over 17 and under 22 years of age. He pursues a course of study lasting 4 years and 3 months.

The instruction in pure mathematics extends from entrance on March 1 to March 1 two years later.

This time is subdivided as follows:

	Periods.
Review of plane geometry	6
Solid geometry	31
Algebra	85
Trigonometry, plane and spherical	31
Analytic geometry, plane and solid	80
Descriptive geometry	62
Differential and integral calculus and theory of errors	95

Each period is 1 hour and 20 minutes long.

The instruction in applied mathematics is distributed through the last three years of the undergraduate curriculum, except that surveying follows immediately upon the completion of trigonometry.

The time assigned to each subject is as follows:

	Periods.	Hours in each period.
Theoretical surveying	20	1
Practical surveying (in field)	13	4
Analytical mechanics	104	....
In laboratory	21	2
In recitation room	83	1⅓
Sound, light, and astronomy	108	1⅓
Mechanics of engineering	91	1⅓
Ordnance and gunnery	94	1⅓

EXTENT OF COURSE IN PURE MATHEMATICS

The course in pure mathematics as laid down in general terms in the regulations of the academy is:

Geometry. Problems in plane geometry. Geometry in space; planes, lines, polyhedrons, cylinders, cones, and the sphere.

Algebra. Detached coefficients, factoring, linear and quadratic equations, graphic representation, the binomial theorem, inequalities, theory of exponents, complex numbers, ratio and proportion, variation, progressions, series, undetermined coefficients, logarithms, the slide rule, interest, combinations, probabilities, determinants, and the theory of equations.

Trigonometry. The measurement of angles, the simple trigonometric functions, the functions of several angles, trigonometric equations, and the solution of plane and spherical triangles.

Analytic geometry. In the plane: Systems of coordinates, change of axes, anharmonic ratios, the straight line, the circle, the parabola, the ellipse, the hyperbola, the polar equation of the conic, the general equation of the second degree, systems of conics, and envelopes. In space: Systems of coordinates, transformations of coordinates, the plane, the straight line, surfaces of the second degree, and plane sections.

Descriptive geometry. Orthographic projections: Points, right lines and planes, problems on their relative positions, the revolution of objects, curves in space (especially the circle and cylindrical helix), surfaces (including ruled surfaces and surfaces of revolution), tangent planes, intersection of surfaces, trihedrals. Spherical projections. Shades and shadows. Central projections or perspective. Isometric projections.

Differential and integral calculus. The theory of limits, differentiation of the standard elementary forms, simple applications of the derivative to velocity and rates, maxima and minima, curvature, evaluation of indeterminate forms, envelopes, expansion of functions, curve tracing, tangent planes, and normal lines to surface. The fundamental principles of integration, the integration of the standard forms, the measurement of arcs, areas, and volumes, mean values, approximate integration, ordinary differential equations.

Method of least squares. Errors to which observations are liable, the correction of observations, the probability curve and its equation, measures of precision, the deduction and the application of the formulas for probable and mean error, weights of observations, and the formation of equations of condition and normal equations.

The course of mathematics as outlined above is compulsory for all students and the time devoted to the subject is the same for all. A marked difference, however, is made in the amount and the difficulty of the matter required of students differing in ability.

This is accomplished in the following way: Upon admission the students are arranged in sections of 10 to 12 in order of ability as shown by their marks on their entrance examination in mathematics. This is a tentative grading of no great value, and in consequence all sections have identical courses until the examination which takes place at the end of the first three months. At that time a well-defined grading according to mathematical ability is possible. Each class is then separated into three subdivisions, known as upper, middle, and lower thirds.

A standard course in mathematics has been set for the lower third that is believed to contain the minimum of knowledge, a proficiency in which will insure that the student can intelligently pursue the applied courses that follow. A more extended course is provided for the middle third. A still more comprehensive course is provided for the upper third, one that is expected to give a thorough foundation in pure mathematics for all subsequent undergraduate and graduate work.

The difference in the courses for the groups of a class appears in the use of a more comprehensive or difficult textbook for the abler student, or, if the same text be used, in an omission of the more difficult subjects for the less able; also in the grading of the illustrative problems and exercises assigned to the different groups; also in a further advance into the theory of the subject by the abler student, even to the inclusion of an additional branch of mathematics.

Transfers of students are freely made from time to time between the sections in each group and less frequently from one group to another. These transfers are based upon the quality of the work performed by the student as proved by his daily tasks, oral and written. Each group is thus induced to strive for the full development of its mathematical powers.

A daily alternation throughout the course, where possible, of two subjects—usually one geometric and the other analytic—and toward the end of the mathematical course a similar alternation of mathematics with the course in mechanics enable the various branches to supplement and assist each other and also give the student more time for the digestion of each subject or for concentration upon the one that demands of him the greater labor.

In the fifth class algebra alternates with plane and solid geometry. In the fourth class algebra alternates with plane and spherical trigonometry. Later, analytic geometry alternates with descriptive geometry. In the third class the course in the calculus and least squares alternates during its latter portion with the subject of mechanics.

PURPOSE OF TEACHING MATHEMATICS

The extent of the mathematical curriculum is determined primarily by the requirements of the succeeding scientific courses in this academy and at the graduate schools for engineers, ordnance and artillery officers.

Remarks on the purpose of the study of mathematics have been variously given in the following extracts:

(From report of Congressional Committee on Military Affairs, 1834.)

Mathematics is the study which forms the foundation of the course. This is necessary, both to impart to the mind that combined strength and versatility, the peculiar vigor and rapidity of comparison necessary for military action, and to pave the way for progress in the higher military sciences. All experience shows that the mind, in order that it may act with efficiency, must be accustomed to exertion. It should be taught gradually to develop its own powers, and as it slowly learns their capacity and the manner of employing them, the increasing lights which are thrown upon its course will enable it to go on for an unlimited extent in the path of improvement.

(From a report of the Academic Board of the Academy, 1843.)

The academic board believe that one of the most important objects of the academy is to subject each cadet, previous to his promotion to a higher grade in the Army, to a thorough course of mental as well as military discipline, to teach him to reason accurately, and readily to apply right principles to cases of daily occurrence in the life of the soldier. They are satisfied that a strict course of mathematical and philosophical study, with applications to the various branches of military science, is by far the best calculated to bring about this end, and that the present scientific course at the academy, the result of the experience of many years, is in its main features such a course. They are aware that many of the cadets, as is the case with most of those who pursue a scientific course at other institutions, will have little occasion to make practical applications of the many mathematical formulæ with which they meet, and that they may have passed over particular problems without thoroughly understanding their meaning in all their important points; still, if the course has been carefully taught, the reasoning faculties will have been strongly exercised and disciplined, and a system and habit of thought acquired which are invaluable in the pursuit of any profession, and as desirable for the infantry or dragoon officer as for any other officer in service.

(From a report of Prof. Church, 1860.)

I consider the course of mathematics as now taught to all who pass their final examination sufficient to enable the cadet to acquire a thorough knowledge of all the courses which follow it, and not more than sufficient to enable him to study with advantage the courses of natural and experimental philosophy, engineering, and ordnance and science of gunnery. Moreover, I regard the mental training of the pupil as one of the great objects of the study of mathematics, a training particularly required by the officer of every corps of the Army, and to which many of them owe their distinguished success; and I believe that the scientific reputation of the academy depends in a great degree upon the thoroughness and extent to which the mathematics and its applications to other sciences are taught, and to diminish them would seriously affect this reputation and the success of the institution.

(From a report of Prof. Bass, 1896.)

The object of the mathematical instruction in this academy is primarily to prepare the pupil for the study of mechanics, wave motion, astronomy, electricity, ordnance and gunnery, and engineering. In addition the study of mathematics develops the reasoning faculties and establishes a mental foundation upon which any branch of knowledge may safely and rapidly be constructed.

(From a report of Prof. Echols, 1907.)

It has been thought best in the past to educate all of our officers in the same institution with practically the same curriculum, thus giving to all branches of the service a nucleus of men well trained along scientific lines and qualified to take up intelligently any graduate work that may be demanded of them * * *.

If we choose to draw a conclusion from the example of other countries, it is that less mathematics is taught on the average to officers of infantry and cavalry. On the other hand, the strides in science in recent years and the increased application of mathematical investigation in electricity, chemistry, ordnance, and engineering demand a thorough foundation in scientific training for officers of engineers, ordnance, and artillery. This foundation must be laid upon a good and sufficient training in pure mathematics. I find that in range the course in mathematics pursued at our Military Academy by the upper sections compares favorably with theirs, constituting about an average. The French and Italian cadet schools cover more ground, the English, Austrian, and German slightly less. In England and Germany there are, however, courses of pure and applied mathematics for specially selected officers at graduate schools.

The conclusion seems to be that the range covered by the upper course in mathematics at West Point is not too great for the proper training of officers of engineers, ordnance, and artillery; that its value may be enhanced by a more thorough training in the subject of differential equations at the expense, if need be, of some other subject.

Since this Government is disposed to take due pains with the education of its officers, irrespective of branch, and since cadets at our institution do not before admission cover with certainty as much ground as at the preparatory schools of other countries, a *general course* in mathematics should be required of all officers for its practical value, but no less for its educational value in training the mind to logical forms of thought, in developing the sense of absolute truthfulness, together with a confidence in the accomplishment of definite results by definite means. A *special course* in mathematics is, on the other hand, to be regarded as the foundation stone in the training of officers for the scientific corps.

ADMINISTRATION

For the purpose of control and instruction, the personnel of the department of mathematics consists of a professor, an associate professor, an assistant professor, and a number of instructors, varying with the size of the classes under instruction. This staff is composed entirely of officers of the United States Army. The professor is permanently in charge as the executive head of the department. He has military control over the instructors and students while they are on duty under him; he assigns the instructors to their work, makes out the courses of study, superintends the instruction, and is responsible that approved methods are followed.

His juniors are all younger officers detached by the War Department from the several branches of the service and sent for periods of four years or more to serve on the teaching force of the academy. They are nominated to the War Department by the professor. Their selection is dictated by the fact that they have shown special ability, aptitude, and predilection for mathematics by their undergraduate record; also by the fact that they are believed to possess those other important qualities of the instructor that are essential for the molding of character in the student.

The junior instructors, whenever it is possible, are trained upon the course they are assigned to teach by a series of conferences conducted by the professor or one of the more experienced instructors.

Under normal conditions only one-fourth of the body of instructors is changed annually. This insures continuity in the teaching staff.

An instructor has charge of two sections of about 10 cadets each which recite to him daily (6 days per week).

METHODS. REVIEWS, AND EXAMINATIONS

A certain portion of a standard textbook is assigned in advance for each day's recitation. Upon this theory and upon the exercises applying it the student is expected to spend from three to four hours in preparation. When the section reports to the instructor for recitation, the latter devotes as much of the beginning of the period as he judges best in answering the questions of the student upon the different points of the lesson for the day, solving illustrative problems and volunteering such explanations and elucidations of the subject matter as he may think advisable. An endeavor is made to select textbooks that present the subject matter in sufficient detail to enable an earnest student of normal intelligence by thorough application to comprehend clearly the theory enunciated. It is the purpose to require this thoughtful application which develops the spirit of mental independence and consciousness of power. A lack of proper effort to accomplish his daily task, therefore, is regarded as a military delinquency on the part of the student and is punished as such.

It is the custom, though not an invariable one, to take each subject of study three times.

First, an advance is made, during which the lessons are short and explanations and demonstrations are numerous. The student is expected to ask and to receive assistance from his instructor upon any difficult point. He is questioned and induced by hints from the instructor to originate questions upon matters that may have failed to suggest themselves to him. On the advance all work of instructor and student is performed upon the blackboard to the benefit of the entire section. It is believed that much profit is derived from seeing the errors of a fellow-student's work corrected and also from observing its excellencies. The sections are composed of pupils of approximately equal ability. Each member is thus encouraged to take an active part in any discussions and receives his full share of the instructor's time and attention.

At regular intervals a review of the advance work is made. The lessons are longer, fewer explanations are necessary, and more applications of theory to the solutions of problems are required of the student. Occasionally an entire period on this partial review is devoted to the solution in writing of the same set of problems by all cadets of the same group.

A second or general review takes place at the close of each subject. This covers the entire course, in long lessons continued over several days. Each day a thorough written test is held upon the portion of the subject assigned for that day. This includes both demonstrations and practical applications. After the completion of the work by the student, solutions are given and explained in full at the blackboard by an instructor and questions relating thereto are answered by him. The student who has qualified upon these written tests is considered proficient on the work of the term without further examination. The one who has not so qualified is given a regular written examination of four to eight hours covering the entire course.

COURSE IN MECHANICS AND ASTRONOMY

The courses in the calculus and in mechanics begin at the same time; the calculus is taught daily from September 1 to November 1, and alternates daily with mechanics from November 1 to March 1; mechanics is taught on alternate days from September 1 to June 1.

The lessons in mechanics in September and October are two-hour periods in the section room, without a preparatory study hour. The principles developed in this part of the course relate to so much of the subject of statics as does not involve the use of the calculus. Simple illustrative experiments are made by the pupils, and the first part of the text is followed in such a way as to bring out the essential points with the least possible loss by misdirected study. The purpose of this part of the course is not only to master the fundamental principles of statics, but also to direct the study so that the pupil shall always use his mathematical knowledge and the language of the text merely as tools with which to shape accurate physical conceptions of the subject. During this preliminary part of the course only such simple definitions as are necessary to the work in hand are required of the students, and the experience gained here is an effective preparation for mastering the more difficult definitions and distinctions in the subject of kinetics.

By November 1 the class has covered enough of the calculus to take up the study of mechanics with mutual advantage to the two courses, and the recitations in mechanics from that date have a study period for preparation, alternating with the calculus.

It is the aim of the course to cover the subject as thoroughly as practicable in a little more than 100 lessons; or, stated in the proportion of the student's entire work for an academic year, about one-fourth.

The subject of statics is carried far enough to include the mechanical powers and a short treatment of the simple principles of graphic statics. The course in rigid kinetics is carried up to as general an explanation of simple gyroscopic motion as may be made by differential equations, without the time integrals; and the year's work is concluded by a short study of fluid equilibrium and flow. Astronomy is carried far enough to secure some facility in handling the sextant, and in solving time, latitude, and longitude problems. This work occupies about 54 days.

The course in ordnance and gunnery requiring previous mathematical training is, in general terms, as follows: Interior ballistics; calculations of the effects of explosion; calculations of the strength of guns of both built-up and wire-wound construction; calculations relating to the construction of the rifling curves of guns; recoil and recoil brakes; exterior ballistics; calculations of the strength of projectiles and the arming resistance of fuses; calculations of the forces brought on the parts of gun carriages by the discharge of the gun; calculations of the stresses in gun carriage parts; calculations relating to gears and gearing; and calculations relating to recoil springs.

II. ENGINEER SCHOOL OF APPLICATION

WASHINGTON BARRACKS, D. C.

OBJECT OF SCHOOL

This school aims to give to the junior officers of the Corps of Engineers a theoretical and practical knowledge in the various departments of engineering required of them in their professional duties as engineers in charge of fortifications, rivers and harbors, lighthouses and aids to navigation, and military engineering in time of peace and war.

ORGANIZATION

The organization of the school is changed from year to year. In 1912 the department of military engineering will be transferred to Fort Leavenworth. The instructors are detailed from the officers of the Corps of Engineers supposed to be specially fitted by their experience in the charge of works pertaining to the department to which they are detailed.

STUDENTS

The student officers are all graduates from West Point and have the benefit of the technical training at that academy; after graduation they are ordered to special designated stations of river and harbor or fortification work, where they are required to observe the operations of the work of construction and submit these as the results of their observations. These being satisfactory, at the end of one year they are ordered to the Engineer School to take up the required course. No examinations are required for entrance, it being assumed that the preparation as outlined above is sufficient.

COURSES OF STUDY.

The courses of study are not definitely fixed, as changes are constantly necessary in order to keep up with the knowledge gained by recent works of construction and operation.

In general the courses are about as follows:

Civil engineering, about 12 weeks; military engineering, about 8 weeks; and electricity, mechanics, and power, about 32 weeks.

STUDY AND APPLICATION OF MATHEMATICS

Pure mathematics is not studied at the Engineer School. The application of the principles of mathematics is required in all departments. A detailed statement of the requirements is shown below.

Roads and pavements.—An elementary knowledge is required of algebra, geometry, trigonometry, analytic geometry; an extensive knowledge is required of descriptive geometry.

Foundations, roofs, and bridges.—These require an extensive knowledge of algebra, geometry, trigonometry, descriptive geometry, analytic geometry, and calculus.

Building constructon, heating, and ventilation.—The course in these subjects requires a fair knowledge of geometry and an extensive knowledge of descriptive or practical geometry.

Water supply, sewage disposal, etc.—These courses cover principally the practical application to hydraulics of such mathematical subjects as algebra, geometry, trigonometry, descriptive geometry, analytic geometry, and calculus, of which a fair knowledge is necessary. The practical and descriptive parts of the above courses require no mathematics.

Surveying and practical astronomy.—These are practically studies in mathematics and, particularly in the case of astronomy, require an extensive knowledge of the application of the principles of algebra, geometry, trigonometry, descriptive geometry, analytic geometry, calculus, and least squares.

Harbor improvement, wave action, etc.—The course in these studies is principally a course of reading as to the practical application of the effects of tides, ocean currents, river currents, jetties, etc., in the formation of harbors. In the reading as outlined above frequent mathematical deductions are made, requiring a fair knowledge of algebra, geometry, trigonometry, descriptive geometry, analytic geometry, calculus, and least squares.

Ordnance and gunnery.—The course is principally one of reading, covering the construction of battleships and principles of design; these require an elementary knowledge of algebra, geometry, trigonometry, descriptive geometry, analytic geometry, calculus, and, at times, least squares.

Design of coast fortifications.—This course is supplemented by visits to seacoast fortifications and mine fields at New York, Fort Monroe, or other suitable seacoast defenses. Students are required to design plans for defense of certain portions of the seacoast, showing plans of defense complete and in detail. This course requires an extensive knowledge of geometry, trigonometry, descriptive geometry, and analytic geometry.

Electricity, practical.—This course is very complete, including experiments of all kinds with electricity in its application to motors, dynamos, lights, etc., for use in seacoast defenses, mines, etc. An extensive knowledge is required of algebra, geometry, descriptive geometry, and analytic geometry.

Mechanics.—This is a further study of mechanics and civil engineering as studied at the United States Military Academy. The course is short, but in portions requires a fair knowledge of algebra, geometry, descriptive geometry, trigonometry, analytic geometry, and calculus.

Power, engines, plants, etc.—This course covers only an incomplete knowledge of the principles of operation of the larger classes of engines, but requires a very good knowledge of the smaller ones. Tests are made of the smaller engines; their efficiencies are obtained; the advantages and disadvantages of their application to the works of construction and operation of rivers and harbors and seacoast defense are systematically studied. These studies require an extensive knowledge of the principles of algebra, geometry, trigonometry, descriptive geometry, and analytic geometry.

METHODS OF INSTRUCTION

Instruction is both practical and theoretical. The course for the year is discussed by the instructors in the school at a board meeting at which the commandant of the school presides. The time allotted to each department is here decided upon, and a schedule is submitted by each department to the commandant. Upon his approval, the course of this department is adopted. Certain books are selected for reading by the students, and portions of these books are required; other important books on the subjects are listed, the reading of which is optional.

Lectures are given during the year on the subjects of study. The lecturers are generally officers of the Corps of Engineers who have had experience in the subject under discussion; other engineers of special experience in similar work are secured as lecturers whenever possible. The library of the school is a very good scientific library.

Enough copies of each book are kept to provide each student with such reading matter as is necessary for his use at the time the particular subject is being studied.

EXAMINATIONS

Written examinations are required in certain subjects, principally those covered by courses in reading. Experiments, if successful, are accepted in lieu of examination in certain parts of the experimental courses.

III. ORDNANCE SCHOOL OF APPLICATION

SANDY HOOK PROVING GROUND, N. J.

The object of this school is to impart to those officers of the Army who are detailed to duty in the ordnance department a theoretical and practical knowledge of the science of designing and using ordnance.

METHOD OF OBTAINING STUDENTS

Officers of the Army at large desiring service in the ordnance department are permitted to take, upon application, a competitive examination held annually. The officers selected are detailed to duty in the department and, as a rule, are sent to the school during their first year's service. The majority of the students are graduates of the United States Military Academy and the remainder of other colleges and technical schools throughout the country.

The entrance examination is intended to demonstrate that each successful candidate has a practical working knowledge of arithmetic, algebra, geometry, trigonometry, analytic geometry, descriptive geometry, differential and integral calculus, and mechanics.

COURSE OF STUDY

1. Pure mathematics. Differential equations. Four weeks. Limited courses in elliptic functions, hyperbolic functions, vectors, and determinants are now being prepared.
2. Ordnance engineering, 21 weeks.
3. Chemistry of explosives, gunpowders, oils, and fuels, 8 weeks.
4. Practical and theoretical electricity, 16 weeks.

Nearly all branches of mathematics are required in the solution of problems connected with the design of guns, gun carriages, projectiles, fuses, and other ordnance material; with the determination of the action of powder in guns and of high explosive bursting charges in projectiles, and with the course in alternating current electricity. The solution of the problems involved in the designing of gun carriages requires a more complete mastery of the different branches of mathematics than any other class of ordnance and perhaps any other class of engineering work.

The course in differential equations embraces: Equations of the first order and first degree, equations of the first order but not of the first degree, singular solutions, linear equations with constant coefficients, linear equations with variable coefficients, ordinary differential equations with more than two variables, and partial differential equations.

METHOD OF INSTRUCTION

Instruction is given by lectures, on which the students take notes. The instruction is limited to the deduction of fundamental principles, generally expressed in equations or formulæ, and to explanations of the practical applications and conditions covered by each problem.

Recitations are not held. The results of each exercise and test are carefully scrutinized and checked, and each principle of which there is an indication of any lack of full understanding is fully explained in a subsequent lecture. During lectures full and free discussion of the principles involved is invited. The discussion among students of their work is encouraged, but the results must be the production of the individual. Stress is laid on the making of calculations correctly. The instructors and students live together in a mess and the latter are under the constant observation of and in contact with the former.

IV. THE COAST ARTILLERY SCHOOL

This school, situated at Fort Monroe, Va., is a school of application, the object of which is to prepare officers and enlisted men of the Coast Artillery Corps for the active duties of their arm of the service; to make research in such branches of science as relate to practical gunnery, submarine mining, and torpedoes in coast defense; to make experiments and to dissiminate such knowledge as may be desirable in the interests of the Coast Artillery service.

COURSES OF STUDY

The regular and advanced courses for officers are embraced in two departments, as follows:

I. Department of artillery and gun defense:
  - Regular course—
    1. Artillery proper.
    2. Artillery defense.
    3. Explosives.
  - Advanced course—
    1. Ballistics.
    2. Artillery defense, advanced.
    3. Explosives, advanced.

II. Department of electricity and mine defense:
  Regular course—
    1. Electricity and mine defense.
    2. Power.
  Advanced course—
    1. Electricity and mine defense, advanced.
    2. Power, advanced.

The object of the advanced course is to amplify for specially selected officers the instruction and work of the regular course, with a view to improving their qualifications as instructors, fitting them for board and technical work, instructing them in the duties of the general staff of an army, and preparing them for duty at the Army War College.

The courses of instruction comprise practical exercises, problems, research, partial examinations, conferences, and lectures.

The course in exterior and interior ballistics requires advanced mathematical training and is, for the greater part, a graduate course in mathematics. The following topics are taken up in this course:

Exterior ballistics. The principal and secondary problems. Accuracy and theory of errors. The calculation of constants, including the coefficient of form and the drift constant. Classification of trajectories. Deductions of empirical formulas. Perforations. Practical work in setting up, adjusting, and using ballistic machines.

Interior ballistics. Relation of maximum pressure to charges. Mode of combustion of powder and its relation to pressures. Initial pressure on the rifling. Characteristics of a powder. Variations. Recoil.

REPORT OF SUBCOMMITTEE 2

MATHEMATICS IN SCHOOLS FOR THE TRAINING OF NAVAL OFFICERS, INCLUDING SCHOOLS FOR GRADUATES OF ANNAPOLIS

The United States Naval Academy, at Annapolis, Md., is under the supervision of the United States Navy Department and has for its purpose the training of officers of the Navy. The students of the Naval Academy are called "midshipmen." According to the present law two midshipmen are allowed for each Senator, Representative, and Delegate in Congress, and two for the District of Columbia; in addition to these, the President appoints five each year from the United States at large.

ENTRANCE REQUIREMENTS

Candidates are required to pass mental and physical examinations to qualify for entrance. The first mental examination is held on the third Tuesday in April and is conducted by the Civil Service Commission at certain authorized places in each State; the second examination is held only at Annapolis, Md., and is under the direction of the Superintendent of the Naval Academy.[1] Mental examinations are given in the following subjects, and applicants may be rejected if found deficient in any one of them: Punctuation, spelling, English, grammar, geography, general history, United States history, arithmetic, algebra through quadratic equations, and plane geometry.

Candidates passing the mental examinations are examined physically at the Naval Academy by a board composed of three medical officers of the Navy. A candidate must be of good moral character, physically sound, well formed, and of robust constitution; any one of 20 stated physical defects is sufficient to cause his rejection. He must be between 16 and 20 years of age. Candidates passing both the mental and the physical examination are admitted as students to the academy. On admission, each midshipman must sign articles binding him to service in the United States Navy for eight years, unless sooner discharged.

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[1] Beginning with the year 1912, both examinations will be conducted by the Civil Service Commission.

COURSE OF INSTRUCTION

The instruction given in the academy extends over a period of four years and includes work in mathematics, mechanics, descriptive geometry, drawing, physics, chemistry, engineering, navigation, ordnance and gunnery, history, English, and modern foreign languages. The following outline indicates only the ground covered in theoretical and applied mathematics during the course:

FIRST YEAR.

	Periods per week.
First term:	
Mechanical drawing	4
Algebra and geometry	6
Second term:	
Mechanical drawing and descriptive geometry	3
Trigonometry	6

SECOND YEAR.

First term:	
Mechanical drawing	3
Analytic geometry and the calculus	5
Second term:	
Integral calculus, spherical trigonometry, and stereographic projection	5

THIRD YEAR.

First term, theoretical mechanics	4
Second term:	
Astronomy and navigation	2
Applied mechanics	3

FOURTH YEAR.

First term, theory and practice of navigation	5
Second term:	
Theory of compass deviations, surveying, and practical navigation	4
Engineering mechanics	3

DISTRIBUTION OF TIME

The academic year begins October 1 and closes the first week in June. The members of the three undergraduate classes are sent on a cruise each summer for a period of three months. On these cruises the midshipmen are required to perform all the general duties of a navigator, with particular reference to the adjustment and use of the navigational instruments on board, to practical pilotage, and to the determination of the ship's position by observation.

During the academic year each class in mathematics requires a period of two hours for recitation; classes recite in sections of 12 students each.

Midshipmen complete the courses in pure mathematics during the first two years in the academy and the courses in applied mathematics in various other departments during the last two years.

PURPOSE OF TEACHING MATHEMATICS

In the teaching of mathematics at the Naval Academy, as in any technical school, the aim is purely practical, the course consisting essentially of the solution of problems which a midshipman must understand in order to become a naval officer.

All of the textbooks used in the department of mathematics have been written expressly for the midshipmen by men in the department. No more theory is presented in these books than is absolutely necessary. The recitation work, which is strictly competitive, consists of solving numerous problems on the blackboard; and perhaps 90 per cent of all monthly, semiannual, and annual examinations are composed of practical problems.

ADMINISTRATION

Instruction in the Naval Academy is carried on through the following departments: Mathematics and mechanics, navigation, seamanship, physics and chemistry, marine engineering and naval construction, electricity, English and modern languages. Each department is supervised by a naval officer. Teaching is done in some departments by naval officers detailed for such duty and in others by both naval officers and civilian instructors. In the department of mathematics there are 13 instructors, of whom 7 are naval officers, and 6 civilian instructors, having been appointed from civil life.

METHODS, REVIEWS, AND EXAMINATIONS

Accurate marking of work done by the midshipmen during their four years' course at the academy is of the utmost importance, for their marks or credits determine the order of their promotion after graduation; consequently all of their work is strictly competitive, and all possible care is taken, therefore, in assigning lessons, in organizing new sections with different instructors each month, and in marking daily recitations and examination papers, so that any advantage or disadvantage in the methods of instruction may be equally shared by all.

The lessons for each day of the month are assigned by the head of the department at the beginning of the month; these assignments are noted by the instructors and given to the midshipmen at each recitation, so that all midshipmen in the same class study and recite precisely the same work at the same time.

A further effort to give all of the midshipmen an equal opportunity in the recitation room is made by a new arrangement of sections and instructors each month. The 12 midshipmen receiving the highest marks in the monthly examination constitute the first section for the following month; the 12 receiving the next highest, the second section, and so on.[1] The instructors are assigned different sections from month to month, so that all midshipmen are placed on an equal footing so far as advantages or disadvantages of different sections and different instructors are concerned.

Midshipmen are marked on a basis of 2.5 for passing, or satisfactory, and 4 for perfect. They receive daily marks for their work in the recitation, and the average of the daily marks is taken as the weekly mark; the average of four weekly marks is taken as the monthly recitation mark. An examination is given at the close of each month and the examination mark is combined with the monthly recitation mark, the former counting one-third. For the information of the midshipmen, a sheet is posted giving the final monthly mark and class number or standing of each member of the class. This plan is followed each month during the year except the months of January and May, when the monthly examinations are omitted, because these months immediately precede the semiannual and final examinations. The semiannual examination mark is combined with the average of the monthly marks from October to January, inclusive, to determine the final mark for the first half year; the semiannual examination mark counting one-fourth. Similarly for the second half year the final mark is combined with the average of the monthly marks for the final mark of the second half year, the final mark counting one-fourth. Semiannual and annual sheets similar to the monthly sheets are posted, giving the mark and rank of each member of the class. The monthly examinations are two hours in length, while the semiannual and final examinations are each five hours. All examination papers must be marked independently by two instructors, the mean of the two markings being taken as the mark for the examination. In case there is a considerable difference between the two markings, the paper is re-marked by the head of the department, and the different marks are then properly adjusted. Instead of regular recitations on Saturday morning, the classes of the first and the fourth years have written recitations of two hours each. The mark received on this paper is counted as the recitation mark for that day. Such recitations are not so frequent in the other two classes.

When a midshipman is badly deficient in one study and fails to make a satisfactory mark (2.5) in any other subject for either the first or second half year, he is dropped from the academy; the vacancy of course is not filled until the following year.

The final term average of every midshipman in each branch of study is multiplied by the coefficient assigned that branch for the term, and the sum of the products is the aggregate mark for the year. Coefficients are assigned to the different branches according to the time devoted to these branches. For mathematics these coefficients are as follows: Algebra and geometry, 3; trigonometry, 3; calculus, 5; applied calculus and stereographic projection, 6; and mechanics, 11.

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[1] In the upper classes there are usually not more than 8 or 10 midshipmen in each section.

The merit roll of the graduating class is prepared at the completion of the four years' course; the names of the graduates are arranged in the order of merit according to the graduating mark, which is the arithmetical sum of the final marks of the four years of the course.

After graduation midshipmen are sent to sea for two years, after which they are given the final graduating examination, and if found satisfactory are eligible for promotion to the commissioned rank of ensign.

THE NATURE OF THE COURSES IN MATHEMATICS

The Naval Academy is a strictly technical school, and the courses in mathematics are essentially practical problem courses. More condensed courses in mathematics have been necessitated at the academy during the last two years by the increased time devoted to the professional subjects of marine and electrical engineering. All subjects ordinarily treated in mathematical courses, but which are not adapted to the needs of a naval officer, are omitted, while certain other important features are given greater emphasis.

In the algebra, particular emphasis is placed upon the following: Computation by logarithms, the graph of the general polynomial and its use, the tracing of curves of the first and second degree, the theory of equations, identities, undetermined coefficients, and series. The subject of choice and chance is merely touched upon, while the subjects of harmonic progression, interest and annuities, continued fractions, theory of numbers, and determinants are omitted. Special free-hand methods are used for tracing curves of the second degree by means of limiting tangents, diameters, and asymptotes.

The work in trigonometry emphasizes particularly accurate logarithmic work in the solution of plane and spherical triangles—the oblique spherical triangles being solved by means of a perpendicular and Napier's rules. The text includes a course in stereographic projections covering as a special feature the projection and solution of the astronomical triangle.

Except for its subsequent use in the calculus, analytic geometry occupies a very small place in the academy compared with that usually assigned it in colleges and universities. The tracing of curves of the third or higher degrees by use of the analytical triangle may be mentioned as a special feature.

The calculus is a rather thorough practical course, emphasizing particularly the following topics: Length and area of curves, surfaces, volumes, center of gravity, center of pressure, and moments of inertia.

USE OF MATHEMATICS IN OTHER STUDIES

Studies requiring mathematical knowledge for their pursuit and the kind of mathematics required for each are as follows: Ordnance and gunnery—trigonometry, calculus, and mechanics; navigation—trigonometry; marine engineering and naval construction—trigonometry and calculus; and electrical engineering—algebra, trigonometry, and calculus.

OPPORTUNITIES FOR FURTHER STUDY

The more important schools attended by certain graduates of the Naval Academy are the School of Marine Engineering, established at the Naval Academy for young officers pursuing graduate courses in this field of study, and the Massachusetts Institute of Technology, for those who are to become naval constructors. Only graduates of the Naval Academy are permitted to take the entire course in the latter institution. The course at the Massachusetts Institute of Technology is one of three years in length and leads to the degree of master of science. In arranging this course the objects sought are the addition to the training already obtained at the Naval Academy of those subjects which are peculiar to naval architecture, and such an extension and rounding out of that training as will best enable a naval constructor to meet the varied and exacting demands of his official position. The course includes theoretical naval architecture, marine engineering, steam and electrical engineering, steam turbines, warship design, sanitation, metallurgy, and metallography. In mathematics all students are required to take advanced calculus, differential equations, and the method of least squares; this is supplemented by courses in applied mechanics, including the strength of materials, graphic statics, and the theory of elasticity.

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UNITED STATES BUREAU OF EDUCATION

BULLETIN, 1912: NO. 3 - - - - - - - WHOLE NUMBER 471

REPORT OF THE COMMITTEE ON UNIFORM RECORDS AND REPORTS

ADOPTED BY THE DEPARTMENT OF SUPERINTENDENCE OF THE NATIONAL EDUCATION
ASSOCIATION : : : : : FEBRUARY 29, 1912

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LETTER OF TRANSMITTAL.

Department of the Interior,
Bureau of Education,
Washington, February 3, 1912.

Sir: The best interests of education demand that there should be adequate and uniform methods and forms of collecting and recording statistics of schools of all kinds in all the States, cities, and rural districts of the Union. The work of collecting, compiling, and interpreting statistics in the Bureau of Education would be greatly helped by this. This bureau, therefore, welcomes the interest in this work which has developed in recent years among school officers throughout the country and which has caused the department of superintendence of the National Education Association to appoint a committee on uniform records and reports. The Commissioner of Education and the Chief of the Division of School Administration of the bureau have cooperated with this committee at its request, and the bureau has lent it all possible aid and assistance. The report of this committee on uniform records and reports contains many recommendations and suggestions regarding forms and the method of using them, which will be of great benefit to the schools in all parts of the country. I therefore recommend that it be published as a bulletin of the Bureau of Education.

Very respectfully,
P. P. Claxton,
Commissioner.

The Secretary of the Interior.

REPORT OF THE COMMITTEE ON UNIFORM RECORDS AND REPORTS.

To the Department of Superintendence of the National Education Association:

Your committee on uniform records and reports has, since the last meeting of the department, continued its work along the lines indicated in the preliminary report submitted at that meeting. That progress has been made is indicated by statistics which were gathered by the United States Bureau of Education showing that 216 cities are now using the cumulative record card, and that 418 cities are able to report their fiscal statistics on the form which was recommended by this committee in cooperation with the United States Bureau of Education, the Census Office, and the Association of School Accounting Officers. We believe that the work which has been begun by our committee should be continued by a permanent committee whose duty it should be to suggest from time to time such improvements in records and reports as may be determined by their study of the situation.

The report which follows is divided into the following sections: (1) Records and reports for State school systems; (2) records and reports for city school systems; (3) pupil records with special reference to the cumulative record card; and (4) the report of fiscal statistics. Accompanying this discussion there are presented as separate documents, the cumulative record card recommended by the committee; the form for reporting fiscal statistics, which was prepared in conference with the Bureau of Education, the Census Office, and the Association of School Accounting Officers, and which is now furnished to cities by the Bureau of Education; and the form for a teacher's register.

STATE REPORTS.

In dealing with that section of its work which relates to State accounting and reports the committee appreciates fully that the legislation of the various States has a most important bearing on the practicability of uniformity in matters of detail. On some points this legislation has to do with matters of fundamental concern to the States, and modification of it is extremely unlikely. Such for example are statutes dealing with the distribution of State school funds. Such funds are secured in a considerable variety of ways, and this distribution is arranged on various bases satisfactory to the legislatures of the different States. While there will doubtless be an increasing recognition of the basic principles that should govern such distribution and this recognition will lead to a certain degree of uniformity in the bases of distribution selected, it is hardly conceivable that local considerations will not continue to govern largely such plans. Recognizing this and other differences, it is clear that the statistics of the States must in a considerable measure conform to definitions, terms, and methods that comply with local statutes and conditions.

The committee does not regard it as essential to the purposes of this report to deal, beyond this explanatory reference, with these necessary points of difference. The following recommendations it hopes will prove a constructive contribution to the part that may be taken by the State departments in securing reasonable uniformity in reporting and in attaining a more efficient publicity through official reports.

The forms to be employed by States in gathering statistics should be similar in general form and arrangement to those used by the National Bureau.—The committee recognizes that an important step toward uniformity in reporting will be to present to the various reporting officers of the country statistical forms as nearly as practicable, uniform in terms, definitions, and arrangement.

If it could be made possible for the local officer to report both to the State and to the National bureau on practically the same basis, distinct gains both in accuracy and in uniformity would accrue.

The committee recognizes the great desirability of an arrangement whereby the statistics of the Bureau of Education as relating to units within the several States might be gathered through the various State departments of education. Such a plan would obviate the necessity of a second reporting by local officers, while it would doubtless increase the means at the disposal of the Bureau of Education for securing statistics from the local units. This plan of reporting to the Bureau of Education through the State offices the committee recommends for adoption as early as practicable. It sees no reason why it may not be adopted by those States that are in position to make such cooperative arrangements, even though all State departments may not be able to make them at once.

In the meantime it repeats the recommendation of its preliminary report, to the effect that State departments in securing statistics from units within the States conform so far as possible to the forms employed by the Bureau of Education, supplementing the points covered therein with those required for local use. These forms, it will be noted, may be issued both in the "long" and the "short" forms for use, respectively, with larger municipalities and with smaller school systems. These forms, issued by the Bureau of Education and approved in conference with this committee, are submitted herewith and made a part of this report.

Essential points not now reported by all the States should by agreement come under universal reporting.—A careful inspection both of National and State reports shows that there are various fundamental points of information relative to schools that are reported by a majority of the States but are not reported by all of them. The committee believes that the basis adopted by the Bureau of Education for all leading items is at once conservative and reasonably comprehensive and that it should be adopted by all the States.

In its preliminary report the committee called attention to various items regarded as fundamental by a majority of the States, but not reported by all of them. In order to collect figures on some of these points, as, for example, the school census (not taken by 3 States), enumeration by sex (omitted by 13 States), school enrollment (only partially taken by 12 States), wages of teachers (not returned for the sexes separately), and private schools (not fully reported), it may be necessary to secure additional legislative authority. The fact that so large a majority of the States have found it desirable to secure these statistics is sufficient evidence of their general interest and value.

Educational reports should be made for the year ending June 30.—There appears to be a considerable variety in the terms for which reports are made. The committee recommends that all school systems, including State systems, make their reports on all educational items for the year ending June 30. It does not appear to the committee that such reports for this period are necessarily inconsistent with a plan of making financial reports for a fiscal year terminating on another date.

The scope of the State report should be coextensive with all educational interests of the State.—The committee believes that the educational report of each State should bear the same relation, but more in detail, to the State and its educational activities that the National report bears to the entire country.

A review of State school reports reveals a wide variety of practice in the scope of investigation conducted by State departments. Some of these reports cover only the essential points of public-school conduct required by law to be returned to the State offices, while others aim to report with reasonable fullness all the educational activities of the State.

With regard to the content of State reports the committee commends to the favorable consideration of State officers the proposition that each State report shall be a compendium of all the educational activities of the State for which it is made. As a supplement to this proposition, the committee mentions the following suggestive outline:

1. A review of educational progress of other States, with particular bearing upon forward movements within the State.

2. Detailed statistics of all public schools under local management—*a*, elementary; *b*, secondary; *c*, normal; *d*, collegiate; *e*, city institutional; *f*, for special pupils; *g*, vocational; *h*, extensional.

3. Summaries of the foregoing.

4. Public schools under direct State management—*a*, elementary; *b*, secondary; *c*, normal; *d*, collegiate; *e*, technical or vocational; *f*, professional; *g*, schools for delinquents; *h*, schools for defectives; *i*, special.

5. Summaries of the foregoing.

6. Schools under private management—*a*, elementary; *b*, secondary; *c*, collegiate; *d*, vocational; *e*, professional; *f*, schools for delinquents; *g*, schools for defectives; *h*, special.

7. Summaries of the foregoing.

8. Special investigations—

(*a*) Investigations dealing with special problems, such as school mortality, nonpromotion, etc., are most efficiently conducted through local school systems. The fruits of such investigations should, however, through the medium of the State report be made available to all the people of the State.

(*b*) State-wide investigations dealing with forward movements affecting a large number of communities, such as school consolidation, conveyance, secondary school distribution, rural progress, etc., should be made directly by State offices.

Special reports or bulletins should be issued at intervals.—The committee strongly recommends the issuing by the States of bulletins or special reports dealing with particular issues at times separate from that of the publication of the comprehensive State report. Such separate reports may be made timely to the discussion of these special issues and hence may be made more effective in promoting a public understanding of them.

The use of charts, diagrams, and illustrations should be considerably increased.—The committee recommends that the State reports, in common with city reports, make larger use of charts, diagrams, and illustrations for the purpose of presenting with greater force matters of special and timely interest. While these are in the nature of devices and as such are rarely applicable to the same set of statistics each year, yet they undoubtedly make an appeal to the interest of any subject that a verbal or tabular statement fails to effect, with a resultant better understanding of it.

Comparative tables should be arranged covering intervals of several years and certain phases of school activity should be reported for longer periods.—The committee believes that both State and city reports should make comparative tables showing statistics covering intervals of 5 or 10 years. Such tables should appear on many items that are annually reported. The work of gathering statistics would, however, be considerably simplified if statistics on various phases of educational progress should be gathered at decennial periods, and the committee is of the opinion that the purpose for which these statistics are gathered would be fully met by such occasional reporting. The United States Bureau of Education should become the source of suggestions as to what information shall be collected for other than annual periods.

Interpretation of statistics is necessary.—As in the case of city reports, the State report must discharge as fully as possible its chief function as an agent of publicity. The merely formal presentation of figures or tables is only a step toward publicity. The reporting officer should bring his school experience and his larger outlook over the educational field to the aid of the public through an adequate interpretation of the statistics presented. Such interpretations should in part be made in the reports themselves, closely connected with tables and their summaries. They will have particular value, however, when presented at opportune times through special bulletins, exhibits, and the public press. The committee recommends a largely increased attention to that phase of educational reporting that aims to make statistics intelligible to the largest possible constituency.

SUMMARY OF RECOMMENDATIONS RELATING TO STATE REPORTS.

A. That the State departments adopt forms for receiving statistics from the units within the States similar, as far as practicable, in arrangement to those used by the Bureau of Education.

B. That all the State departments in gathering information adopt as a basis the items accepted by the practice of a majority of States and of the Bureau of Education.

C. That educational statistics be reported for the year ending June 30.

D. That each State report be made the clearing house of information of all educational institutions and activities within the State.

E. That the State report give publicity to any local investigations whose findings would have general interest and that it include the findings of State-wide investigations covering matters of State-wide application.

F. That special bulletins or reports be issued at opportune times.

G. That tables be arranged to show comparisons covering a range of years and that certain phases of educational activity be reported at decennial or other periods.

H. That larger attention be paid to the interpretation of statistics.

CITY SCHOOL REPORTS.

The need for the gathering of data showing actual conditions in the schools is obvious. If the school is to be scientifically managed, and its effectiveness definitely measured by fixed tests, eliminating mere personal bias and unsupported opinion, facts must be collected and employed as a guide to administration.

For convenience, an outline showing the organization of the school system, together with the date of introduction of various kinds of activities, such as evening schools, summer schools, manual training, etc., should constitute part of a school report. The following outline suggests merely one form in which this may be expressed:

OUTLINE FORM OF CITY SCHOOL REPORT.

Outline of school system.........

- 1. Normal school (organized 18—).
- 2. High school........
  - (a) Academic high schools (first organized 18—).
  - (b) Technical high school (opened Oct., 19—).
  - (c) High school of commerce (opened Oct., 19—).
- 3. Elementary school.
  - (a) Regular elementary schools (organized 18—).
  - (b) Special elementary schools.
    - (1) Boys' school (opened 18—).
    - (2) School for deaf (established 18—).
    - (3) Schools of individual instruction (defectives) (opened 18—).
    - (4) Backward schools (organized 19—).
    - (5) School for cripples (opened 19—).
    - (6) School for blind (opened 19—).
    - (7) Elementary industrial school (organized 19—).
- 4. Kindergarten (opened —).
- 5. Evening school....
  - (a) Evening elementary schools (opened 18—).
  - (b) Evening high schools (opened 19—).
- 6. Summer school....
  - (a) Summer high school (opened 19—).
  - (b) Summer grammar schools (opened 19—).
  - (c) Summer primary schools (opened 18—).
  - (d) Summer manual training school (opened 19—).
  - (e) Summer boys' school (opened 19—).
  - (f) Summer kindergartens (opened 19—).
  - (g) Summer playgrounds (opened 19—).
  - Etc., etc.

TEACHERS' SALARY TABLE.

Obviously, the question of salaries is important. For purposes of comparison, it is desirable to gather data showing the number of teachers at the various salary units indicated in the following table:

Number of elementary-school teachers with salaries—		Number of high-school teachers with salaries—	
Below $350.		Below $500	
$350 to $400		500 to 600	
400 to 450		600 to 700	
450 to 500		700 to 800	
500 to 550		800 to 900	
550 to 600		900 to 1,000	
600 to 650		1,000 to 1,100	
650 to 700		1,100 to 1,200	
700 to 750		1,200 to 1,300	
750 to 800		1,300 to 1,400	
800 to 850		1,400 to 1,500	
850 to 900		1,500 to 1,600	
900 to 950		1,600 to 1,700	
950 to 1,000		1,700 to 1,800	
1,000 to 1,050		1,800 to 1,900	
1,050 to 1,100		1,900 to 2,000	
1,100 to 1,150		2,000 and above	
1,150 to 1,200			
1,200 and above			

The following form of table is used to show the per cent of teachers for the various periods of service:

Per cent of elementary teachers for the period—	Per cent.
Under 5 years	
5 to 9 years	
10 to 14 years	
15 to 19 years	
20 to 24 years	
25 to 29 years	
30 years and above	

Per cent of high-school teachers for the period—	Per cent.
Under 5 years	
5 to 9 years	
10 to 14 years	
15 to 19 years	
20 to 24 years	
25 to 29 years	
30 years and above	

UNITS OF COST.

Increasing interest centers in cost. It is important that the per capita cost of instruction, on the one hand, and of equipment and supplies, on the other, should be shown not only city wide, but also per building. The per capita cost for each subject in the high school, for example, chemistry, physics, manual training, etc., should be shown for each building, and also city wide. Moreover, for purposes of comparison, these tables of cost should cover a period of 5 or even 10 years. Not only does economy in educational supplies and educational equipment follow such exhibit of tables of cost, but it leads to unification and standardization of educational equipment in the various buildings in a school district. Tables similar to the following will be found helpful:

Per Capita Cost of Instruction.

TABLE I.—*Showing cost of instruction in the regular day elementary schools, for the years 1903–1912, the enrollment, the per capita cost of instruction, the increase and the per cent of increase in per capita cost of each year over the preceding, also the per cent of increase in per capita cost since 1903.*

Years.	Cost of instruction in regular day elementary schools.	Enrollment in regular day elementary schools, or average daily attendance, or both.	Per capita cost of instruction in regular day elementary school.	Increase in per capita cost over preceding year.	Per cent of increase in per capita cost over preceding year.	Per cent of increase in per capita cost since 1903.
1902–3						
1903–4						
1904–5						
1905–6						
1906–7						
1907–8						
1908–9						
1909–10						
1910–11						
1911–12						

TABLE II.—*Showing cost of instruction—that is, amount paid for salaries of supervisors, principals, and teachers in all schools and in each type of school for the years 1908–1912, the per cent of total spent on each type of school, and the per cent of increase since 1908.*

	1907–8		1908–9		1909–10		1910–11		1911–12		Per cent of increase since 1908.
	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	
Total cost of instruction											
Office supervision											
General supervision											
Kindergarten supervision											
German supervision											
Penmanship supervision											
Music supervision											
Drawing supervision											
Manual training supervision											
Physical training supervision											
Normal school											
High schools											
Academic high schools											
Regular instruction											
Special instruction											
Music											
Drawing											
Manual training											
Physical training											
Technical high school											
High school of commerce											
Elementary schools											
Regular elementary schools											
Regular instruction											
Special instruction											
German											
Manual training and cooking											
Special elementary schools											
School for deaf											
School for blind											
Boys' school											
Special schools											
Elementary industrial											
Backward schools											
School for cripples											

TABLE II.—*Showing cost of instruction—that is, amount paid for salaries of supervisors, principals, and teachers in all schools and in each type of school for the years 1908–1912, the per cent of total spent on each type of school, and the per cent of increase since 1908*—Continued.

	1907–8		1908–9		1909–10		1910–11		1911–12		Per cent of increase since 1908.
	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	Total for instruction.	Per cent of total to each school.	
Total cost of instruction—Continued.											
Kindergarten											
Evening schools											
Evening high school											
Evening elementary school											
Summer schools											
Summer high school											
Summer elementary school											
Grammar school											
Primary school											
Boys' school											
Manual training school											
Kindergarten											
Playgrounds											

TABLE III.—*Showing cost of instruction, enrollment, and per capita cost of instruction in each type of school in the city of ————, for the year ———.*

	Cost of instruction.	Enrollment or average daily attendance.	Per capita cost of instruction.
Normal			
High schools			
Academic high school			
Technical high school			
High school of commerce			
Elementary schools			
Regular elementary			
Special elementary			
Backward school			
School for blind			
Boys' school			
School for cripples			
School for deaf			
Elementary industrial			
Special schools			
Kindergarten			
Evening schools			
Evening high schools			
Evening elementary schools			
Summer schools			
Summer high schools			
Summer elementary schools			
Grammar school			
Primary school			
Manual training school			
Boys' school			
Kindergarten			
Playgrounds			

The following table is a type by which may be shown various statistical items of interest and value covering a period of years:

TABLE IV.—*Showing enrollment in the regular day elementary school, for the years 1903–12, the number of teachers in the regular day elementary school, number of pupils per teacher, the decrease in number pupils per teacher over preceding year, and the per cent of decrease in number of pupils per teacher since 1903.*

	Enrollment regular day elementary school.[1]	Teachers in regular day elementary school.	Pupils per teacher in regular day elementary school.	Decrease over preceding year in number pupils per teacher in regular day elementary school.	Per cent of decrease in number pupils per teacher since 1903.
1902–3					
1903–4					
1904–5					
1905–6					
1906–7					
1907–8					
1908–9					
1909–10					
1910–11					
1911–12					

[1] Exclusive of transfers and the enrollment of all special schools.

TABLE V.—*Showing the enrollment in the regular day elementary schools for the years 1903–1912, the number of regular teachers in the regular day elementary schools, the average number pupils per regular teacher, the decrease in number of pupils over the preceding year, also the per cent of decrease in number of pupils per regular teacher since 1903.*

	Enrollment regular day elementary schools.	Number regular teachers regular day elementary schools.	Number pupils per regular teacher regular day elementary schools.	Decrease in number pupils per regular teacher.	Per cent of decrease in number pupils per regular teacher since 1903.
1902–3					
1903–4					
1904–5					
1905–6					
1906–7					
1907–8					
1808–9					
1909–10					
1910–11					
1911–12					

TABLE VI.—*Showing enrollment in Latin, English, algebra, etc., the number dropping out and failing in each high-school class.*

	Number enrolled in the study.	Number dropping study.	Number remaining.	Failures of number remaining to end of year.	Total failing and dropping study.	Per cent of failures of those remaining to end of year.	Per cent of total failures and dropping study.
I. Latin							
II. Latin							
III. Latin							
IV. Latin							
I. English							
II. English							
III. English							
IV. English							
Algebra							
Etc.							

ANNUAL REPORT OF THE SUPERINTENDENT OF SCHOOLS.

Every report should contain a table of contents, showing not only the general headings treated in the report, but also the subheads. Such reports should also contain a carefully prepared index. These two items make usable the school report and are important factors in its make-up.

Every annual report of a city superintendent should also contain tables showing enrollment, distribution of enrollment, withdrawals, distribution of withdrawals, nonpromotions, distribution of nonpromotions, etc. Information upon which these figures may be compiled should be gathered on forms similar to those which are named immediately below by title and which are printed on the pages following with the exception of all but one of those forms which pertain to high schools. As the high-school forms are similar in all essential respects to those for the elementary schools, it has not seemed necessary to print them. These same forms may also be used in the superintendent's annual report for the presentation of statistics upon these same points.

ELEMENTARY SCHOOLS.

Principal's Term Report.

A. Enrollment, promotions, nonpromotions, by grades.
B. Distribution of enrollment by ages and grades.
C. Distribution of withdrawals by ages and causes.
D. Distribution of attendance.
E. Graduates by years in schools.
F. Nonpromotions by grades and causes.
G. Failures, by studies and grades.
H. Distribution of leavings and withdrawals by ages and grades.
I. Ages of graduates.
J. Enrollment and attendance.
K. Distribution of whole-time teachers.

Teacher's Term Report.

L. Enrollment by divisions.
M. Nonpromotions by grades and causes.
N. Failures by studies and grades.
O. Enrollment and attendance.
P. Distribution of enrollment by ages.
Q. Distribution of withdrawals by ages and causes.
R. Distribution of leavings by ages.
S. Beginners by training.
T. Beginners by ages.

HIGH SCHOOLS.

Principal's Term Report.

AA. Enrollment and attendance.
BB. Distribution of enrollment by ages and classes.
CC. Source of new pupils.
DD. Ages of new pupils.
EE. Distribution of leavings and withdrawals by ages and classes.
FF. Ages of graduates.
GG. Distribution of enrollment, number leaving, withdrawals, by classes and terms.
HH. Distribution of enrollment, number leaving, withdrawals, by courses and classes.
II. Distribution of withdrawals by classes, ages, causes.
JJ. Graduates by year in school.
KK. Distribution of teachers.
LL. Enrollment in studies and failures in each.

Teacher's Term Report.

MM. Enrollment and attendance.
NN. Distribution of enrollment by ages and classes.
OO. Source of new pupils.
PP. Ages of new pupils.
QQ. Distribution of enrollment, number leaving, withdrawals, by classes and terms.
RR. Distribution of enrollment, number leaving, withdrawals, by courses and classes.
SS. Distribution of withdrawals.
TT. Distribution of leavings and withdrawals, by ages and classes.
UU. Age of graduates.
VV. Graduates by years in school.

PUBLIC ELEMENTARY SCHOOLS.

REPORT OF THE ——— SCHOOL, FOR THE TERM ENDING ———, 191–.

ENROLLMENT, PROMOTIONS, NONPROMOTIONS, BY GRADES.

All per cents will be figured at office of superintendent.

	First Grade.													Total all grades.		
	Divisions.									Total.						
	C.			B.			A.									
	B.	G.	T.	B.	G.	T.	B.	G.	T.	Boys.	Girls.	Total.		Boys.	Girls.	Total.
Enrollment for term													(Same form for grades second to eighth.)			
In division first time																
Previously in division																
Leaving																
Withdrawals																
Enrollment at date this report																
Per cent enrollment at date on enrollment for term																
Promotions: One division only																
Per cent on enrollment at date																
Per cent on enrollment for term																
Promotions: Two divisions																
Per cent on enrollment at date																
Per cent on enrollment for term																
Nonpromotions																
From in division first time																
From previously in division																
Per cent nonpromotions on enrollment at date																
Per cent nonpromotions on enrollment for term																

DISTRIBUTION OF ENROLLMENT AT DATE OF THIS REPORT, BY AGES AND GRADES.[1]

Ages.	Grades.																										
	First.			Second.			Third.			Fourth.			Fifth.			Sixth.			Seventh.			Eighth.			Total.		
	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.
6 years																											
7 years																											
8 years																											
9 years																											
10 years																											
11 years																											
12 years																											
13 years																											
14 years																											
15 years																											
16 years																											
17 years																											
18 years																											
19 years																											
20 years																											
Total by grades																											
Below normal age																											
Normal age																											
Above normal age																											

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[1] Give age September 1.

DISTRIBUTION OF WITHDRAWALS, BY AGES AND CAUSES.

Causes.	Ages.																															Per cent of all withdrawals due to each cause.
	6		7		8		9		10		11		12		13		14		15		16		17		18		19		Total by causes.			
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Total.	
Financial condition of home																																
Illness in family																																
Personal illness																																
Physical defects																																
Incapacity (mental)																																
Indifference																																
Failing promotion																																
Left city																																
To go to work																																
Total by ages																																

DISTRIBUTION OF ATTENDANCE.

Time.	Boys.	Girls.	Total.	Per cent of whole number.
Attending entire term				
Attending at least—				
80 days				
70 days				
60 days				
50 days				
40 days				
30 days				
20 days				
10 days				
Attending less than 10 days				
Total (equal enrollment for term)				

GRADUATES, BY YEARS IN SCHOOLS.[1]

	Boys.	Girls.	Total.
Taking six years			
Six and one-third			
Six and two-thirds			
Taking seven years			
Seven and one-third			
Seven and two-thirds			
Taking eight years			
Eight and one-third			
Eight and two-thirds			
Taking nine years			
Nine and one-third			
Nine and two-thirds			
Taking ten years			
Total			

[1] Counting three terms as a school year. Data from promotion record card.

NONPROMOTIONS, BY GRADES AND CAUSES.

		Irregular attendance.	Physical defects.	Personal illness.	Incapacity (mental).	Indifference.
First Grade.[1]						
C	Boys					
	Girls					
	Total					
B	Boys					
	Girls					
	Total					
A	Boys					
	Girls					
	Total					
Total	Boys					
	Girls					
	Total					
Second Grade.						
C	Boys					
	Girls					
	Total					
B	Boys					
	Girls					
	Total					
A	Boys					
	Girls					
	Total					
Total	Boys					
	Girls					
	Total					
Third Grade.						
C	Boys					
	Girls					
	Total					
B	Boys					
	Girls					
	Total					
A	Boys					
	Girls					
	Total					
Total	Boys					
	Girls					
	Total					
Grand total	Boys					
	Girls					
	Total					
Per cent of total due each cause						

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[1] Same form used for grades fourth to eighth.

FAILURES, BY STUDIES AND GRADES.

		Reading.	Spelling.	Language.	Grammar.	Arithmetic.	History.	Geography.
First Grade.[1]								
C	Boys							
	Girls							
	Total							
B	Boys							
	Girls							
	Total							
A	Boys							
	Girls							
	Total							
Total	Boys							
	Girls							
	Total							
Second Grade.								
C	Boys							
	Girls							
	Total							
B	Boys							
	Girls							
	Total							
A	Boys							
	Girls							
	Total							
Total	Boys							
	Girls							
	Total							
Third Grade.								
C	Boys							
	Girls							
	Total							
B	Boys							
	Girls							
	Total							
A	Boys							
	Girls							
	Total							
Total	Boys							
	Girls							
	Total							
Grand total	Boys							
	Girls							
	Total							
Per cent failures on enrollment for term								

[1] Same form used for grades fourth to eighth.

DISTRIBUTION OF LEAVINGS AND WITHDRAWALS, BY AGES AND GRADES.[1]

Ages.	Grades.																										
	First.			Second.			Third.			Fourth.			Fifth.			Sixth.			Seventh.			Eighth.			Total.		
	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.	Boys.	Girls.	Total.
6 years																											
7 years																											
8 years																											
9 years																											
10 years																											
11 years																											
12 years																											
13 years																											
14 years																											
15 years																											
16 years																											
17 years																											
18 years																											
19 years																											
20 years																											
Total by grades																											
Below normal age																											
Normal age																											
Above normal age																											

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[1] Give age September 1.

AGES OF GRADUATES.[1]

	11	12	13	14	15	16	17	18	Total.
Boys									
Girls									
Total									

[1] Give age at last birthday.

ENROLLMENT AND ATTENDANCE.

	Boys.	Girls.	Total.
Average monthly enrollment			
Average daily attendance			

PUBLIC ELEMENTARY SCHOOLS.

TEACHER'S TERM REPORT.

………………………………building. Grade ……………………………………………

Term ending……………………………191 ………………………………Teacher.

	………………………… grade.											
	Divisions.									Total.		
	C.			B.			A.					
	B.	G.	T.	B.	G.	T.	B.	G.	T.	Boys.	Girls.	Total.
Enrollment for term												
In division first time												
Previously in division												
Leaving												
Withdrawals												
Enrollment at date of this report												
Promotions:												
One division only												
Two divisions												
Nonpromotions												
From in division first time												
Previously in division												

NONPROMOTIONS, BY GRADES AND CAUSES.

		Irregular attendance.	Physical defects.	Personal illness.	Incapacity (mental).	Indifference.
………… GRADE.						
C	Boys					
	Girls					
	Total					
B	Boys					
	Girls					
	Total					
A	Boys					
	Girls					
	Total					
Total	Boys					
	Girls					
	Total					
Per cent total nonpromotions due each cause						

FAILURES, BY STUDIES AND GRADES.

		Reading.	Spelling.	Language.	Grammar.	Arithmetic.	History.	Geography.
.... GRADE.								
C	Boys							
	Girls							
	Total							
B	Boys							
	Girls							
	Total							
A	Boys							
	Girls							
	Total							
Total	Boys							
	Girls							
	Total							
Per cent failures on enrollment for term								

Average monthly enrollment	
Average daily attendance	

DISTRIBUTION OF ENROLLMENT AT DATE OF THIS REPORT, BY AGES.[1]

	Ages.															
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total.
Boys																
Girls																
Total																

[1] This table to be filled in on May report only.

DISTRIBUTION OF WITHDRAWALS, BY AGES AND CAUSES.

Causes.	Ages.																														
	6		7		8		9		10		11		12		13		14		15		16		17		18		19		Total by cause.		
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Total.
Financial condition of home																															
Illness in family																															
Personal illness																															
Physical defects																															
Incapacity																															
Indifference																															
Failing promotion																															
Left city and entered no school																															
To go to work																															
Total by ages																															

DISTRIBUTION OF LEAVINGS, BY AGES.

	Ages.															
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Boys																
Girls																
Total																

BEGINNERS 1 C DIVISION, BY TRAINING.

	Boys.	Girls.	Total.
Total number of beginners			
(a) Number having received kindergarten training			
(b) Number having received no kindergarten training			
Promotions			
(a) Number having received kindergarten training			
(b) Number having received no kindergarten training			
Nonpromotions			
(a) Number having received kindergarten training			
(b) Number having received no kindergarten training			

BEGINNERS 1 C DIVISION, BY AGES.

Ages.	Boys.	Girls.	Total.
5½ up to 6			
6 up to 6⅓			
6⅓ up to 6⅔			
6⅔ up to 7			
7 up to 7⅓			
7⅓ up to 7⅔			
7⅔ up to 8			
8 up to 8½			
8½ up to 9			
9 and above			
Total			

HIGH SCHOOLS—ENROLLMENT IN STUDIES AND FAILURES IN EACH.

Studies (subjects running more than one year indicated D, C, B, A).[1]	First term.[2]															
	Enrollment.			Repeaters.			Dropping.			Remaining.			Failures.			Per cent failures on number remaining.
	B.	G.	T.	B.	G.	T.	B.	G.	T.	B.	G.	T.	B.	G.	T.	
Latin																
D. Latin																
C. Latin																
B. Latin																
A. Latin																
German																
D. German																
C. German																
B. German																
A. German																
French																
B. French																
A. French																
Spanish																
B. Spanish																
A. Spanish																
Greek																
C. Greek																
B. Greek																
A. Greek																
History																
American history and civics																
English history																
Ancient history																
Medieval and modern history																
Industrial history																
Art history (European)																
Art history (American)																
Economics, commercial law, and local industries																

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[1] Other studies included, but not listed here, are English, mathematics, science, drawing, manual training, industrial activities, commercial activities, physical training, and music.

[2] The same forms are used for the second and third terms.

GENERAL INFORMATION.

A page devoted to this subject should be included in each city report. The following subheads are recommended—

1. The legal basis:

(*a*) Independent district or city government; if latter, relation of education department to other departments of the municipal government, especially as to raising of money, erection of buildings, and appointment of members of board of education.

(*b*) Method of voting and paying bonds.

2. Financial basis:

(*a*) Limits of taxation and bonded indebtedness for school purposes.

(*b*) Assessed valuation of independent district or municipality.

(*c*) What per cent of true valuation is the assessed valuation.

(*d*) Present tax rates for schools.

(*e*) Amount of bonded indebtedness for schools.

(*f*) Amount of local school tax paid by owner of real estate whose true valuation is $5,000.

(*g*) Per cent of total school moneys received from State, county, municipality, and school district.

(*h*) Approximate per cent of school moneys paid by business corporations not owned principally by citizens, as railroads and large industrial, mining, and commercial enterprises.

3. (*a*) Population of city compared with population of four preceding censuses.

(*b*) Number engaged in each principal class of occupation—agricultural, professional, domestic and personal, trade and transportation, manufacturing and mechanical, and also number engaged in each of the chief occupations that are represented in the city under each of these classes.

4. School census:

(*a*) Public school enrollment.

(*b*) Private school enrollment.

(*c*) Average daily attendance based on number belonging.

(*d*) Average daily attendance based on enrollment.

(*e*) Average daily attendance based on school census.

5. Scope of system—number of different kinds of schools, classes, and activities.

6. Organization of administration—relative authority and duties of superintendent, assistant superintendent, supervisors, principals, teachers.

7. Per cent of teachers appointed from outside the city.

PUPIL RECORDS.

The foundation of all statistics concerning pupils is established in the records made by teachers in the schoolroom. Unless these records are expressed in common terms having a definite meaning the data gathered from them are not comparable. School statistics as at present compiled and compared are unreliable and of little value, and they will continue to be so until agreement can be reached not only as to terms used and the definite meaning of these terms, but also, to some extent, as to the method of recording and arranging the original data upon which school statistics are based.

The first work of the committee on uniform statistics consisted of a careful investigation of the subject of school records, and this resulted in the submission of an elementary school record system, through the cooperation of the United States Commissioner of Education, to school superintendents throughout the country. Although several forms were offered for the purpose of getting criticisms and suggestions and for the sake of illustrating the complete working out of a system of school records, chief emphasis was laid on the cumulative record card which was framed to serve as a permanent and progressive record of the pupil's kindergarten and elementary school career. The form recommended is given below. The card is 6 inches wide and 4 inches high. Copies may be obtained from the Bureau of Education.

Elementary School Record System—Promotion Record.

This card is to pass from teacher to teacher or from school to school as the pupil is promoted or transferred. It is to be filled out and sent to the principal's office when any change is made requiring a change in the office records. It is then to be sent to the teacher who has the pupil.

(a) School.	(b) Date of admission.	(c) Age Sept. 1.		(d) Grade.	(e) Room.	(f) Days present.	(g) Health.	(h) Conduct.	(i) Scholarship.
		Yrs.	*Mos.*						
									(over)

Elementary School Record System—Admission, Discharge, and Promotion Card.

To be kept for every pupil and sent with the pupil when he is transferred to any school, either public or private, in the city or outside the city. Great care should be used to have the names complete and correct.

Write all dates as follows: 1912-9-25.

(1) 1. Last name............ (2) First name and initial.......

(3) Place of birth........... (4) Date of birth. (5) Vaccinated.

(6) Name of parent or guardian. ....

(7) Occupation of parent or guardian. ....

(8) Residence. (Use one column at a time. Give new residence when pupil is transferred.)		(9) Date of discharge.	(10) Age.	
			Yrs.	*Mos.*

When a pupil is permanently discharged to work, to remain at home, or because of death, permanent illness, or commitment to an institution, this card is to be returned to the principal's office and a full statement of the cause of the pupil's discharge is to be made in the blank space remaining above.

8-304 (over)

After an examination of more than 500 replies to that part of the commissioner's circular relating to a cumulative record card, the committee finds as follows:

1. That there is substantially unanimous assent to the following general proposition: *A cumulative record card should be kept for every child throughout his entire kindergarten and elementary school career.*
2. That suggestions made by correspondents have not shown a preponderance of opinion in favor of any specific increase or decrease in either the size or contents of the card.
3. That in view of those conclusions the card submitted has been adopted as best representing the consensus of opinion on the matter of a cumulative record card, and the committee recommends the general use of this card or one in substantial agreement with it as to the essential facts needed for statistical data and school administration.

The committee desires to call attention to the following suggestive list of uses to which the card may be put:

1. Amount of attendance of individual pupil for one year.
2. Comparative rates of progress in schools having seven-year, eight-year, or nine-year elementary courses.
3. Classification of pupils by age and grade. (Note that a standard date for computing ages is established, viz, September 1.)
4. Classification of pupils for enrollment data:
    (*a*) Duplicate enrollment in the school.
    (*b*) From other public schools in town or city.
    (*c*) From other public schools in State.
    (*d*) Original enrollment from all other sources.
5. Number of times child has been detained in a grade.
6. Foreign birth as affecting progress.
7. Kindergarten training as affecting progress.
8. Attendance in other schools as affecting progress.
9. Absence as affecting progress.
10. Numerous inquiries having to do with individual school management.

Diverse opinions as to the necessity of certain items on the "admission, discharge, and promotion card," as, for example, item "Conduct," are not necessarily barriers in the way of the uniform use of the form of card recommended; for in any school system such an item may be omitted by direction of the superintendent or left optional with principals. The value of a uniform card lies chiefly in three considerations:

1. Universal adaptability for use in whatever system of schools the pupil may enter.
2. Decreased cost because of printing in large quantities.
3. Establishment of common practices of record making and common terms for the expression of facts valuable for statistical investigation.

It is believed that any general record card recommended for universal adoption should not include a detailed statement of facts needed for an adequate study of individual cases of physically abnormal and retarded children. For such a purpose a special form should be used providing for yearly records of defective eyesight, hearing, condition of teeth, and other physical characteristics, and for records concerning nutrition, environment, specific cases of illness, special aptitudes, and such other facts as are likely to be desired. The exact form of such a card may well be left for future consideration.

The general cumulative record card and this supplementary card will represent the *minimum* and *maximum* requirements of the individual cumulative record.

The daily register or daily summary should show four groups of admitted pupils as follows:

(*a*) Pupils previously enrolled during the year, including transfers, *within the school or school district*. (This item is thrown out in computing the number of different pupils enrolled during the year in a given school or district.)

(*b*) Pupils previously enrolled during the year *in some other school or school district in the town or city*. (This item is thrown out in computing the number of different pupils enrolled during the year in a given town or city.)

(*c*) Pupils previously enrolled during the year *in other towns or cities in the State*. (This item is thrown out in computing the number of different pupils enrolled during the year in a given State.)

(*d*) Pupils *not* previously enrolled during the year *in any town or city in the State*. (These are original enrollments included in all reports.)

It is not useful to attempt a classification of discharged pupils into four groups corresponding exactly to the four groups of admitted pupils. The following classification is suggested as a desirable one:

(*a*) Pupils temporarily discharged, and transferred within the school or school district.

(*b*) Pupils transferred to any other school, public or private. (Graduates separately.)

(*c*) Pupils permanently discharged to go to work. (Schooling discontinued before completion of elementary-school course.)

(*d*) Pupils discharged for other reasons. (A relatively small number whose schooling is discontinued before completion of elementary-school course for accidental reasons.)

More important, at the present time, than forms for recording attendance and enrollment data, is the securing of a common terminology for certain conditions of attendance and enrollment. The following definitions are submitted as representative of the best practice:

1. AGE AND GRADE CLASSIFICATION.—*For this purpose the age on the 1st day of September should be used. This is the age at which, approximately, the pupil enters upon the work of a new grade. There are good reasons for taking it in preference to January 1, the day on which the work of the grade is partially completed, or July 1, the approximate date on which the work of the grade is finished. It is commonly used in school census enumerations, and is conveniently near the time at which a great majority of pupils enter school. If once recorded on the "admission, discharge, and promotion card" it can be made a matter of record for each succeeding year with practically no effort and with little likelihood of error.*

2. NUMBER ENROLLED.—*It is generally understood that this item means the number enrolled exclusive of duplication, in whatever school unit it is reported for. The way in which this number may be ascertained is indicated under "Enrollment data," above.*

3. NUMBER BELONGING.—*As soon as a pupil is known to have left the school without intention to return he ceases at once to belong and he is not thereafter included in the number belonging. If absent under any other circumstances he is carried on the rolls as "belonging," and marked absent for three consecutive days (or until he returns if his consecutive absence*

is less than three days in duration). He is "temporarily discharged" at the end of three consecutive days of absence, and then ceases to "belong" until he returns to school and is "readmitted."

A period of three days is suggested as the limit of time during which pupils may be counted as "belonging," for the reason that it is believed to represent the common practice in a majority of the States.

N. B.—*"Average number belonging" means the same as "average membership." The average number belonging is found by the same process as the average attendance.*

4. AVERAGE ATTENDANCE.—*The average daily attendance during the school year (which is the average number of pupils actually present each day the schools were in session) may be computed as follows:*

(*a*) *For a single school: Add together the number of days each pupil was present during the year or the number of pupils present each day during the year, and divide the sum (which is the "aggregate attendance in days") by the number of such school days.*

(*b*) *For a group of schools having the same number of days in the year (as the schools of most cities have): Divide the combined aggregate attendance in days of all the schools by the number of days in the school year.*

(*c*) *For a system of schools having different lengths of school year (as, for instance, those of a county): Add together the average attendance of the component schools and groups of the system as ascertained by the foregoing rules. For larger systems, as those of a State, the summing-up process is continued in the same way.*

NOTE.—*In systems of schools where monthly reports of attendance are called for the general principles of a, b, and c, above, apply to the finding of monthly averages. The sum of the monthly averages of attendance in the schools of most cities, divided by the number of months, is approximately the same as the average attendance for the year found by the methods given above.*

5. AVERAGE NUMBER OF DAYS IN THE SCHOOL YEAR.—*In a school system having different lengths of school year in its various units (as in c, above), the average number of days in the school year is found by dividing the combined "aggregate attendance in days" of all schools of the system by the "average attendance" as ascertained by the method given in c.*

6. DISTRIBUTED ATTENDANCE.—*Distributed attendance is the attendance of individual pupils distributed by groups according to the number of days they have attended school during the year.*

A record of the number of days attended by each pupil during the year is provided for on the "admission, discharge, and promotion card," and it is believed that such a record, if generally kept, will prove to be of great interest and value in measuring school efficiency.

FISCAL STATISTICS.

In order to determine the cost of any particular part of our system of education, it is necessary not only to have adequate statistics concerning pupils and teachers, but also a report of fiscal statistics differentiated, not only with regard to the purpose for which money is spent, but also with regard to the special types of schools which are found in a given city. The form of report recommended by the committee provides for such differentiation as will enable anyone to make adequate comparisons among the several cities of the United States, and at the same time calls for a system of accounts which will make it possible to discover the cost of particular types of schools within the system itself.

The form which follows was agreed upon by a committee of representatives from the United States Bureau of Education, the Census Office, the Association of School Accounting Officers, and the Committee on Uniform Records and Reports of the Department of Superintendence. This schedule for reporting fiscal statistics is the one now sent out by the United States Bureau of Education. It is as follows:

A. PAYMENTS.

I. EXPENSES (COST OF CONDUCTING SCHOOL SYSTEM).

	Total.	Salaries.	Other objects.
EXPENSES OF GENERAL CONTROL (OVERHEAD CHARGES).			
1. Board of education and secretary's office			
2. School elections and school census			
3. Finance offices and accounts			
4. Legal services			
5. Operation and maintenance of office building			
6. Offices in charge of buildings and supplies			
7. Office of superintendent of schools			
8. Enforcement of compulsory education and truancy laws			
9. Other expenses of general control			
10. Total			

	Total.	Schools and special activities.							
		Day schools.		Evening schools.		Normal schools.	Schools for the industries.	Special schools.	Special activities.
		Elementary, including kindergarten.	Secondary (high).	Elementary.	Secondary.				
EXPENSES OF INSTRUCTION.									
11. Salaries of supervisors of grades and subjects									
12. Other expenses of supervisors									
13. Salaries of principals and their clerks									
14. Other expenses of principals									
15. Salaries of teachers									
16. Textbooks									
17. Stationery and supplies used in instruction									
18. Other expenses of instruction									
19. Total									
EXPENSES OF OPERATION OF SCHOOL PLANT.									
20. Wages of janitors and other employees									
21. Fuel									
22. Water									
23. Light and power									
24. Janitor's supplies									
25. Other expenses of operation of 26. school plant									
Total									

A. PAYMENTS—Continued.

I. EXPENSES (COST OF CONDUCTING SCHOOL SYSTEM)—Continued.

	Total.	Schools and special activities.							
		Day schools.		Evening schools.					
		Elementary, including kindergarten.	Secondary (high).	Elementary.	Secondary.	Normal schools.	Schools for the industries.	Special schools.	Special activities
Expenses of Maintenance of School Plant.									
27. Repair of buildings and upkeep of grounds									
28. Repair and replacement of equipment									
29. Insurance									
30. Other expenses of maintenance of school plant									
31. Total									
Expenses of Auxiliary Agencies.									
LIBRARIES.									
32. Salaries									
33. Books									
34. Other expenses									
PROMOTION OF HEALTH.									
35. Salaries									
36. Other expenses									
TRANSPORTATION OF PUPILS.									
37. Salaries									
38. Other expenses									
39. Total									
Miscellaneous Expenses.									
40. Payments to private schools									
41. Payments to schools of other civil divisions									
42. Care of children in institutions									
43. Pensions									
44. Rent									
45. Other miscellaneous expenses									
46. Total									

II. OUTLAYS (CAPITAL ACQUISITION AND CONSTRUCTION).

47. Land									
48. New buildings									
49. Alteration of old buildings									
50. Equipment of new buildings and grounds									
51. Equipment of old buildings, exclusive of replacements									
52. Total									

A. PAYMENTS—Continued.

III. OTHER PAYMENTS.

53. Redemption of bonds........................ $..........
54. Redemption of short-term loans........................ ....
55. Payment of warrants and orders of preceding year........................ ....
56. Payments to sinking funds........................ ....
57. Payments of interest........................ ....
58. Miscellaneous payments, including payments to trust funds, textbooks to be sold to pupils, etc........................ ....
59. Total........................ ....
60. Balances at close of year at........................ $..........
61. Total payments and balances........................ ....

B. RECEIPTS.

REVENUE RECEIPTS.

62. Subventions and grants from State........................ $..........
63. Subventions and grants from county........................ ....
64. Subventions and grants from other civil divisions........................ ....
65. Appropriations from city treasury........................ ....
66. General property taxes........................ ....
67. Business taxes (licenses, excise taxes, taxes on corporations, taxes on occupations, etc.)........................ ....
68. Poll taxes........................ ....
69. Fines and penalties........................ ....
70. Rents and interest........................ ....
71. Tuition and other fees from patrons........................ ....
72. Transfers from other districts in payment of tuition........................ ....
73. All other revenue........................ ....
74. Total revenue receipts........................ ....

NONREVENUE RECEIPTS.

75. Loans and bond sales........................ $..........
76. Warrants issued and unpaid........................ ....
77. Sales of real property and proceeds of insurance adjustments........................ ....
78. Sales of equipment and supplies........................ ....
79. Refund of payments........................ ....
80. Other nonrevenue receipts........................ ....
81. Total nonrevenue receipts........................ ....
82. Total receipts........................ ....
83. Balances at beginning of year........................ ....
84. Total receipts and balances........................ ....

C. VALUE OF SCHOOL PROPERTIES.

Class of buildings.	Total value of sites, buildings, and equipment.	Value of sites and buildings.	Value of equipment.	Interest on value of school plant.
General control..........	....	....	....	....
Elementary schools..........	....	....	....	....
Secondary schools..........	....	....	....	....
Normal schools..........	....	....	....	....
Schools for the industries..........	....	....	....	....
Special schools..........	....	....	....	....

DEFINITIONS OF TERMS USED IN THE SCHEDULE FOR REPORTING THE FISCAL STATISTICS OF CITIES.

HEADINGS.

Total.—Under this heading include the sum of all figures in the columns to the right, these columns to contain no duplicates.

Schools for the industries.—Include only those schools which offer training in specific vocations. Do not include those schools in which instruction in hand training is offered with a general educational aim, as, for example, the prevailing type of manual training high school.

Special schools.—Include schools for blind, deaf, feeble-minded, delinquents, dependents, etc.

Special activities.—Include lectures, playgrounds, social centers, etc.

ITEMS.

School year.—Report data for the school year instead of the fiscal year when they conflict, if this is possible without much additional labor.

Net payments and receipts only to be reported.—The receipts and payments to be reported must in all cases be net, i. e., the receipts must always show the total amounts received from all sources less any amounts received in error and later corrected by refund payments; and the payments must always show the total amounts paid for the different objects less any amounts paid in error and later corrected by refund receipts.

EXPENSES.

Item 6. Offices in charge of buildings and supplies.—Divide this item into two parts when possible, placing upon the first dotted line expenses of "offices in charge of buildings," including those having charge of the construction and maintenance of physical properties, such as superintendent of buildings, school architects, inspector of buildings, superintendent of repairs, and schoolhouse commission. Payments to special employees engaged exclusively on new work should be charged to outlays. Opposite "offices in charge of supplies" upon the second line, report expenses of the offices of superintendent of supplies, business manager, or other officers whose duties are concerned with the purchase and distribution of supplies.

Item 7. Office of superintendent of schools.—Include all payments for salaries and expenses of the superintendent of schools and of those subordinate administrative officers whose duties are largely administrative and who are not primarily supervisors of instruction, such as assistant superintendent and board of examiners. See Item 11.

Item 8. Enforcement of compulsory-education and truancy laws.—Include salaries and office expenses of truant officers and police officers detailed as truant officers if paid out of school fund. (Payments for expenses of truant and parental schools should not be entered here, but in column headed "Special schools.")

Item 11. Salaries of supervisors of grades and subjects.—Include salaries of assistant superintendents whose duties are mainly connected with the supervision of instruction and of supervisors of special subjects and of grades, including only those who devote half or more than half of their time to supervision. Include also the salaries of clerks of such officers.

In case an employee renders service in more than one kind of school in the same capacity, as that of a supervisor, prorate his salary, clerk hire, and other expenses between the different kinds of schools according to the amount of time devoted by him to each, charging the expense to the same account under each kind of school.

In case an employee performs one function in one kind of school and another function in another kind of school, as that of supervisor in the elementary schools and that of teacher in the secondary schools, charge his salary, clerk hire, and other expenses to the accounts corresponding to the function to which he gives the major portion of his time (if his time is evenly divided, to the higher function, as supervisor) and to the kind of school in which he exercises such function.

Item 13. Salaries of principals.—This item includes supervising principals, principals of groups and districts, and principals of buildings or similar units, including only those persons devoting half or more than half of their time to administration and supervision of instruction.

Item 15. Teachers.—Include all regular, special, and model teachers who devote more than half of their time to instruction.

Item 16. Textbooks.—Include only the payments for free textbooks furnished the pupils. The payments for textbooks purchased to sell to pupils should be reported under Item 58.

Item 17. Supplies.—Supplies are those things which when once used are actually or constructively consumed, including such items as writing paper, drawing paper, blank books, pencils, pens, adhesives, fasteners, carbon paper, rubber stamps, supplies for typewriter, and other mechanical office or school devices; magazines, newspapers, and other printed matter for current use; textbooks (for students, not purchased for library), test tubes, litmus paper, filter paper; polishing and abrading supplies; brooms and scrub brushes; drugs, chemicals, cleansers; laboratory supplies; wearing apparel; food supplies; flags;

recreational supplies, etc. Include also freight and cartage of such items. Supplies used in instruction should be included under Item 17; those used in operation of plant, under Item 24. See also definition of equipment, Item 50.

Item 18. Other expenses of instruction.—These items include other expenses incident to instruction, as rent of halls for graduation exercises, diplomas, etc.

Item 21. Fuel.—Include also freight, cartage, and weighing charges.

Item 24. Janitor's supplies.—See Item 17.

Item 27. Repair of buildings and upkeep of grounds.—Include payments for labor and materials incident to the repair of buildings, including painting, glazing, and of plumbing, lighting, heating, and ventilation equipment, and all payments for labor and materials incident to keeping the grounds in normal condition.

Item 28. Repairs and replacement of equipment.—For definition of equipment see Items 50 and 51.

Items 32, 33, and 34. Library expenses.—Payments for these expenses should be distributed according to the kind of school. Payments by school authorities for the maintenance of libraries used principally by the general public and not exclusively by the schools should be reported under "special activities."

Items 35 and 36. Promotion of health.—Report all payments for general promotion of health and distribute them among the various kinds of schools and educational activities as far as possible. Among the expenses that should be distributed to the different kinds of schools and special activities are "supervisors of physical training," "care and upkeep of playgrounds," etc. Payments for offices of directors and other overhead charges should be reported on the margin or on separate sheet under proper heads, as "clinic," etc.

Items 40 and 42. Payments to private schools and institutions.—Report all payments by the school system to private schools and institutions for the care and instruction of children in schools and institutions other than those belonging to the school system. These payments should be distributed as called for by the wording of the two lines, according to the kind of school or institution in which the children are kept; if in a day school or night school they should be given in the columns for such schools; while if in an institution furnishing board and clothing they should be placed in the column for special schools.

Item 44. Rent.—Charges for rent of offices used by the general administration should be reported under Item 8.

Items 47–51. Outlays.—Under "Outlays" report all payments for lands, new buildings, new equipment, additions to buildings, or extensive alterations that materially change and improve the buildings, classifying these payments as called for by these items. Include with payments for land all costs of acquiring title, original grading, and improvements to the grounds, artesian wells, etc. Include with payments for new buildings, architects' fees, advertising for contracts, payments on contracts for construction, installation of plumbing, lighting, heating, and ventilation equipment, etc.

All reports of payments for new equipment for general administration offices and all reports of payments for the acquisition, construction, or equipment of new buildings for the general administration should be reported in a column marked "Administration" on the margin or on an extra sheet.

Items 50–51. Equipment.—All things other than buildings, fences, and similar structures which are adapted to continuous use for increasing the efficiency or economy of human effort, including motors, power-operated machinery and accessories, hand tools, clocks, pianos, window shades, laboratory apparatus, furniture and furnishings, desks, globes, maps, charts, and typewriters, blackboards, except when included in contract for new building, wagons, harness, and other things used in transportation, fire-fighting apparatus, including hose, extinguishers, etc. (For convenience lighting, plumbing, heating, and ventilating equipment are considered as part of the building.)

Item 58. Miscellaneous payments.—Include also any excess of the amount paid for supplies purchased for a storeroom over the amount issued on requisition, and expenses for school lunch rooms carried on by school funds.

RECEIPTS.

Items 62–64. Subventions and grants.—Include all subventions and grants whether obtained from income from State funds, from leases of school lands, from appropriations, or from general property, business or poll taxes, or from fines and penalties.

Item 65. Appropriations from city treasury.—School systems that are administered as departments of the city government will report after Item 65 the aggregate appropriations from the city treasury for the use of school systems less any amounts that are derived from specific sources and are used exclusively for specific school purposes. These generally include amounts that for independent school districts would be reported after Inquiries 62, 63, 64, 71, 72, and in some cases 66. All amounts deducted as above directed from the aggregate appropriations should be reported on these lines as in the case of independent school districts.

Item 78. Sales of equipment and supplies.—Include receipts from sale of textbooks and supplies to pupils; also any excess of the amount of supplies issued on requisition from a storeroom over the amount paid for supplies; also receipts from lunch rooms carried on by school funds, from admission to public entertainments, etc.

DEFINITIONS OF FISCAL ITEMS IN THE SCHEDULE FOR STATE SYSTEMS AND IN THE ABRIDGED FISCAL SCHEDULE FOR CITIES.

The definitions of the items in the standard fiscal schedule for cities apply to the same items in the standard schedule for State systems and in the abridged city schedule, but many of the items in the last two are combinations of one or more items in the first schedule. A table is given below showing how this combination has been made. In order to ascertain the kinds of expenses that should be charged to any item in either of the last two schedules the definitions of all the items in the standard schedule which were combined in order to make the item should be consulted. Thus, to determine the expenses to be charged to Item 10 in the abridged schedule for cities, the definition for Items 22, 23, 24, and 25 in the standard schedule must be followed, as is indicated in the following table. Similarly, the expenses to be charged to 28b in the State schedule are given in definitions of Items 21 to 25, inclusive.

Table showing manner of "telescoping" items of standard fiscal schedule into items of other schedules.

State schedule.	Abridged city schedule.	Standard city schedule.
26a	1	1 2 3 4 5 6
26b 26c	2	7 8
27a	3	11 12
	4	13 14
27b	5	15
27c	6	16
	7	17 18
28a	8	20

Table showing manner of "telescoping" items of standard fiscal schedule into items of other schedules—Continued.

State schedule.	Abridged city schedule.	Standard city schedule.
28b	9	21
	10	22 23 24 25
29	11	27 28 29 30
30a	12	32 33 34
30b	13	35 36
30c	14	37 38
31	15	40 41 42 43 44 45
32	17	47 48 49
33	18	50 51
34	21	53 54 55 56
35	20	57
	22	58
	25	62
	26	63
	27	64
	28	65

Table showing manner of "telescoping" items of standard fiscal schedule into items of other schedules—Continued.

State schedule.	Abridged city schedule.	Standard city schedule.
	29	66
	30	67
	31	68
	32	69
	33	70
	34	71
	35	72
	36	73
	38	75 76
	39	77 78
	40	79 80

Progress in the field of school records and reports will be made possible by the cooperation of superintendents throughout the United States with the Bureau of Education and with the committee of this department, should such a committee be permanently appointed. The discussion of this committee and the forms which are submitted herewith have the advantage of having been formulated after a careful study of records and reports which are at present in use in our various school systems. That they may be improved upon is fully realized by those who have contributed to the discussion and investigation which has led to the formulation of this report.

Payson Smith, *Chairman.*
George Drayton Strayer, *Secretary.*
William H. Elson.
E. C. Warriner.
Charles M. Lamprey.

UNITED STATES BUREAU OF EDUCATION
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MATHEMATICS IN THE TECHNICAL SECONDARY SCHOOLS IN THE UNITED STATES

INTERNATIONAL COMMISSION ON THE TEACHING
OF MATHEMATICS

THE AMERICAN REPORT

COMMITTEE No. VI

DEPARTMENT OF THE INTERIOR

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INTERNATIONAL COMMISSION ON THE TEACHING OF MATHEMATICS.

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THE AMERICAN REPORT.

Committee No. VI. Mathematics in the Technical Secondary Schools in the United States.

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J. E. Downey, High School of Commerce, Boston, Mass.
Professor J. E. Ostrander, Massachusetts Agricultural College, Amherst, Mass.

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E. R. Smith, Brooklyn Polytechnic Preparatory School, Brooklyn, N. Y.

[The report of this subcommittee is incorporated in the general report.]

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Dr. Tait Butler, Farm Gazette, Starkville, Miss.

Supplementary Report. The Industrial School of Secondary and Intermediate Grade.

Nathan N. Dickler, Manual Training High School, Brooklyn, N. Y.

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MATHEMATICS IN THE TECHNICAL SECONDARY SCHOOLS IN THE UNITED STATES.

PART I.

INTRODUCTORY.

The secondary technical schools of the United States, because of their heterogeneity, present peculiar difficulties to an investigation along the lines laid down by the International Commission. While such schools have existed for many years, it is particularly within the last decade that a great increase in their numbers has taken place, for it is within that period that the tendency to break away from the traditions of the general secondary schools and to bring the schools into close contact with industrial and commercial life, rather than to raise to a maximum their efficiency in furnishing preparation for higher education, has become a movement of sufficient strength to alter essentially the character of existing schools and to determine that of those newly established.

The "manual training high school" is the oldest of the important types of public secondary technical schools in the country. As a type, moreover, it is the most conservative of the schools to be considered in this report, in that to a large extent the traditions of the general secondary school have been retained and the function of the school as an instrument of preparation for higher education emphasized. The ideals of this type of school are essentially scientific rather than classical or technical.

At the other extreme stands the "trades school," a type which is in its infancy as a public institution but examples of which have existed for many years as private or endowed institutions. Here the aim is primarily that of training for immediate entrance into a definite trade or trades and for efficiency in the work thereof. The school is not, or is not primarily at least, an intermediate step in the student's progress toward higher education.

These types represent the extremes. It must, however, be remembered that the lines of demarcation are by no means sharply drawn and that rigid classification is, at the present time at least, scarcely possible.

The schools just mentioned are in the province of subcommittee 1. The schools considered by subcommittee 2 fall into three classes—high schools of commerce, commercial departments of general secondary schools, and private commercial schools (the so-called "business colleges"). On these schools, too, though to a less extent, the influence of the traditions of the general secondary school is in evidence at one end of the series, while at the other end the ideal of the trades school, i. e., training for immediate business activity, is dominant.

The secondary agricultural schools studied by subcommittee 3 are of recent origin. More than schools of the other two classes they are supported in whole or in part by State rather than by municipal appropriations, and consequently are to a greater extent under State supervision. Their object is to provide such an education for the youth of the agricultural community as will tend to retain him in that community as an efficient member thereof. In consequence, except in so far as they lead to the agricultural colleges, their tendency is toward producing immediate vocational efficiency rather than to serve as a step toward higher education.

In view of this diversity it may well be asked what there is in common among these schools that justifies their inclusion in the same category. The obvious answer is that the schools in question are the most recent result of that movement which has led to the establishment of the technical colleges and the broadening of the curricula of the classical colleges and secondary schools, namely, the movement toward bringing the instruction within the school into closer contact with the phenomena and problems of life outside the school, and toward making the knowledge gained in the school more immediately useful to the pupil when he leaves.

AIM OF THE MATHEMATICAL INSTRUCTION.

With the wide differences in general object which exist in the technical secondary schools are naturally associated similar differences in the aim of the mathematical instruction therein.

The schools show in different degrees the common tendency to emphasize the utilitarian side of the subject. Large, well-organized schools which form an integral part of a municipal school system or are controlled by university authorities, while recognizing the utilitarian side and providing for it by suitable selection of problems and correlation with the work of the technical departments, also emphasize the logical element of the subject and the importance of mathematics as an independent science.

There are schools in which, if the character of the text used is any indication, the formal element is predominant; and on the other hand, as in the trades schools and the private commercial schools, the aim is mainly to produce accuracy and speed in the application of a limited range of mathematical principles to the problems of a definite trade or occupation.

The situation may be illustrated by the following quotations from information furnished by various schools:

(1) The ends to be attained are the knowledge of a body of geometrical truths to be used in the discovery of new truths, the power to draw correct inferences from given premises, the power to use algebraic processes as a means of finding results in practical problems, and the awakening of interest in the science of mathematics.

(2) In mathematics two ends are constantly kept in view: First, stimulation of the inventive faculty, exercise of judgment, development of logical reasoning, and the habit of concise statement; second, the association of the branches of pure mathematics with each other and with applied science, that the pupil may see clearly the true relations of principles and things.

(3) It is the aim * * * to give that knowledge and training to the students that shall make them capable men, ready to meet successfully the practical questions of everyday life, and to solve intelligently the problems constantly arising in office, factory, and field; hence, the practical side of mathematics is emphasized rather than the purely theoretical. Abstract mathematical discussions, as such, are avoided except as they are necessary to a better comprehension of results, and then they are made as direct and clear as possible.

Stress is placed upon the application to mechanical, physical, and electrical problems, but it is intended that the instruction shall be of such a character as to give the student power and incentive to perform ordinary mathematical work with confidence, precision, and success.

(4) In the courses in mathematics the main purpose is to train the students, not to prove propositions and formulæ, but to make intelligent use of these propositions and formulæ in the solution of original problems.

(5) They must know enough of mathematics, drawing, and science to insure intelligent, progressive workmanship, as contrasted with rule of thumb methods.

(6) We aim to give them some idea of the subject of elementary mathematics with special reference to its application in technical studies.

(7) The aim of the courses is twofold: First, to teach the methods of computation necessary for the solution of common problems arising in shop practice; second, to present in condensed form the essentials of algebra, geometry, and trigonometry for the benefit of those who have not had a high-school training, and to show the applications of these subjects to the more advanced types of shop problems.

(8) The practical results of the method are usually the acquisition of certain "rules of thumb" which are immediately available in the trade work of the student. There is probably no very great increase in mathematical ability.

(9) The course in mathematics is designed:

First, to develop in the pupil the power of independent thought, to cultivate the inventive faculty, and to inculcate the habit of clear, concise, logical statement. To this end the course is so arranged that the graphic, concrete branches of the subject precede those that are abstract and analytic.

Second, to teach the student the importance of mathematics in relation to the applied sciences, the mechanic arts, and to business life. For this purpose he is required to apply the formulas of algebra and trigonometry to physics, mechanics, chemistry, and engineering; and the short methods of arithmetic and mensuration to the practical work of bookkeeping and architecture.

The course in mathematics as taught in this school is both preparatory and complete. Those boys who finish their studies here possess a good working knowledge of the subject; and those who continue their studies in colleges or in technical schools possess an adequate preparation for higher work.

(10) The aim of the instruction is to inculcate habits of accuracy, rapidity, and neatness in the manipulation of algebraic operations, and to inspire a thorough knowledge of the fundamental principles and laws of the subject. To aid in securing these results the pupils are required to solve a large number of carefully selected problems.

During the first half of the sophomore year algebra is again taken up. A thorough review of such portions of the elementary algebra as are deemed necessary by the instructor is followed by a course in advanced algebra. This course covers topics usually studied in the freshman year in the colleges and higher technical schools.

Five recitations a week during the second half of the sophomore year and the first half of the junior year are devoted to plane and solid geometry. The instruction aims primarily to use the subject as an instrument of education. Geometry contains a system of knowledge that is indispensable to success in many of the pursuits of life, but the presentation of this system of knowledge can never be other than a secondary object in a course of proper instruction in the subject. In reality the pupil ordinarily comes to the subject with many of its leading facts already in his possession. The real objects kept constantly in view in teaching the subjects are training in logical reasoning, an object of increased importance, as it is the only course in strict reasoning with which a large number of young people ever become closely acquainted; training in clear and accurate expression, an object not wisely neglected in any department of instruction; training in imagination and invention. To aid in these objects, extensive practice in original exercises is given, in which the pupil is required to devise his own proof, under the guidance and suggestions of the instructor.

The last half of the junior year is given to plane and analytical trigonometry. The textbook is supplemented by frequent familiar talks pointing out the best methods of procedure and illustrating the applications of the subject to surveying, navigation, etc. Special stress is placed upon the use of logarithms in computations and also upon analytical work to insure familiarity on the part of the pupil with the transformations and definitions necessary to success in future mathematical and engineering courses.

The schools considered are "secondary" schools, whatever their specific name, and consequently the aim of their instruction, except in the case of the private commercial schools and certain trades schools, is to a greater or less degree influenced by the requirements for admission to higher institutions. In fact, this element is an important consideration in all of the activities of these schools, though of course it is not necessarily predominant.

The mathematical curricula include arithmetic, commercial arithmetic, algebra, geometry, trigonometry, analytic geometry, the calculus, history of mathematics, and so-called "applied" or "shop" mathematics.

In schools where curricula are arranged with more or less reference to the entrance requirements of the colleges, algebra, geometry, and trigonometry receive about the same amount of time as in general secondary schools, viz, one year each of elementary algebra and plane geometry, and one-half year each of advanced algebra, solid geometry, and trigonometry. A year's work ordinarily represents five exercises per week for 33 to 40 weeks, i. e., a total of 165 to 200 exercises. The length of the exercises is from 40 to 50 minutes.

The data accessible render a precise statement of the division of time between the two algebraic subjects and between the two geometric subjects impracticable. The more advanced subjects are occasionally omitted, and in this case the tendency appears to be toward the retention of solid geometry and trigonometry rather than advanced algebra.

The schools to which the above statements apply are ordinarily, though not necessarily, of the type known as "manual-training" schools, as distinguished from the "technical," "industrial," or "trades" schools.

These latter schools, as well as some of the manual-training schools, prefer to offer a course in arithmetic of from 50 to 200 exercises.

A few schools present courses in so-called "shop mathematics," the nature of which appears from the following outline taken from the circular of a trades school:

COURSE I, ELEMENTARY.—SHOP ARITHMETIC.

This course comprises work with common and decimal fractions, measurements, percentage, ratio and proportion, square and cube root; applying these principles to such shop problems as gearing—simple and compound; how to select gears to cut screws and spirals; computations on the lever, including the lathe indicator, lever safety valve, the Prony brake; pulleys and hoists; simple, compound, and differential indexing with the milling machine; problems connected with the speed lathe and engine lathe; computing the horsepower of steam engines, electric dynamos, and motors.

COURSE II, ADVANCED.—ALGEBRA, GEOMETRY, AND TRIGONOMETRY, WITH APPLICATIONS TO SHOPWORK.

This course is open to those who have completed Course I or who have had a preparation equivalent to a good grammar-school education. It treats of the most important principles of *algebra*, especially of the equation as a means of solving problems and of the derivation and use of formulas. The practical side of *geometry* is next taken, emphasizing the methods of finding areas and volumes, weights of bars of various shapes and materials, heating surface of boilers, etc. The last half of this course is spent on *trigonometry*, including the use of logarithms and logarithmic tables and emphasizing the applications of trigonometry to the more advanced types of shop problems.

The private commercial schools give no mathematics but arithmetic and commercial arithmetic; the commercial departments of several secondary schools give commercial arithmetic and sometimes algebra and geometry; while the "high schools of commerce" always give commercial arithmetic and a course in algebra and offer geometry and trigonometry as elective subjects.

The agricultural schools generally give one-half to one year's work in arithmetic, usually with reference to the problems of farm life, e. g., farm accounts, mensuration, bookkeeping, etc. They ordinarily give the same amount of time to algebra and geometry as do other secondary schools. Advanced algebra is occasionally given, trigonometry in about 25 per cent of the schools, frequently with reference to its use in surveying.

Analytic geometry and the calculus are seldom given except in schools which properly belong in the province of Committee IX in that their work, while not leading to a degree, nevertheless covers the first two years of the work of the higher technical schools. Except for these schools, the subjects mentioned are offered only in courses preparatory to the colleges.

The history of mathematics is specifically mentioned by only one school (and that a school for girls) and is given in connection with the regular work in algebra and geometry.

As to the matter of correlation of the mathematical subjects among themselves or with other subjects, it would appear that it is necessary to distinguish between the actual state of affairs and the tendencies at work. Taking the schools as a whole, it may fairly be said that *systematic* correlation is not widespread. The principle of correlation, however, is generally regarded with favor, but as a rule it is not systematically applied, except where the relation of the subjects (e. g., commercial arithmetic and bookkeeping) is so obvious that the necessity is apparent. In so far as the term "correlation" indicates use of problems taken from the applied sciences or from daily life, there is fairly general application of the principle, but in the sense of systematic coadaptation of mathematical and other courses it is not generally applied.

The situation may be illustrated by the following quotations:

> (1) On the technical side the pupil articulates the mathematics with the work of the drafting room, shop, domestic science, and domestic art. Teachers of technical subjects are in constant touch with the mathematics department, anticipating problems which will arise and reporting immediately to that department any weakness shown by a pupil in problem or principle.
>
> (2) In this work a great deal of time will be spent in laboratory study, so that the pupil will obtain such a first-hand knowledge of the subject that he can afterwards readily and efficiently apply it in the shops and laboratories. No sharp distinction will be drawn between algebra, geometry, etc., but the different methods will be treated merely as various ways of getting at the same thing, of which one way may be the more useful in one case and another method that best adapted to deal with another situation. At all times the work in mathematics will be kept in close touch with the shopwork; the aim will be to so train the pupil that he can use his mathematics in the shop readily and efficiently.

These statements are made by schools which strongly emphasize the principle of correlation. Both are recently organized schools.

On the other hand, we have in answer to the question, "Are any systematic attempts made to correlate mathematics with other subjects?" the following:

(3) Some, but more later.

(4) In past, 25 cents on the dollar; will aim to do better in future.

In many cases the answer was a flat "No."

The chairman of the committee is of the opinion, based on internal contradictions in the evidence submitted by the schools, that no satisfactory conclusion as to the nature and results of the application of the principle of correlation can be obtained except on the basis of a study of a considerable number of schools, this study to be made by a single individual or a small committee and on the spot.

EXAMINATIONS.

There is no evidence to indicate that examinations are to any extent used as the sole means of determining the proficiency of the pupil. They are used as auxiliaries for that purpose, but the results are combined with those of daily work. They are ordinarily written, may be from 40 minutes to 4 hours in length, and occur from 30 to 2 times per year. The tendency is toward relatively frequent examinations, not exceeding 2 hours in length.

METHODS OF TEACHING.

The movement which has led to the establishment of the secondary technical schools finds its principal expression in the emphasis laid on the concrete. Consequently one should expect to find, and does find, that increasing attention is paid to the concrete element of the instruction, both in material and method. Nothing, however, could be further from the truth than an assertion that *as a class* those schools have developed and are using methods of instruction widely different from those of general secondary schools. Certain schools, it is true, have developed such methods; the majority have not.

The information derived from the questionnaires is not extensive or detailed enough to warrant detailed statements. The basis of the above assertions lies rather in the direct and indirect evidence contained in the catalogues of the schools.

As illustrations of such evidence the following statements are quoted:

(1) Pupils in mathematics are given acquaintance with the language of mathematical symbols, called formulæ, in which problems and laws involving weight, size, time, force, and the like are frequently stated. They are taught to understand these formulæ, to solve problems so stated, and to use the

mathematical symbols in the statement and solution of new problems. Pupils are taught also to state and solve problems by graphical methods, i. e., by scale drawing or by the *graph*, and immediately to solve the same by the algebraic methods of the equation or the proportion. The pupil becomes familiar with the standard geometrical forms, the laws of their structure, measurement, and relation to other forms, and acquires the power to state these laws algebraically, together with some ability to make a clear and logical proof of the truth of geometrical theorems. Geometry and algebra are carried along together for two years and a part of the third. In the first year the geometrical laws and concepts furnish much material for developing algebraic problems and processes. In the second year algebra is used to develop geometrical theorems, and to fix them in mind through use. The school offers a continuous four years' course of elementary and advanced algebra, plane and solid geometry, and plane trigonometry.

In the classroom a combination of laboratory, recitation, and examination methods is employed. The theory of a new subject, especially in the earlier years, is usually developed by the instructor; and home work is assigned to clarify and impress it, and to enlarge its application. The method of approach to new subject matter is, in general, that of induction, the particular leading to the general, the concrete to the abstract. Deductive work becomes more prominent in the late years.

(2) Throughout the entire course this study (mathematics) will be pursued as a means to quantitative determination in the workshop, laboratory, office, and countingroom. Much of the educational value lies in the grasp which is gives the students of quantitative relations.

Objective work will introduce new subjects, so that there may be a rational basis for intelligent use of symbols and a thorough conception of the power of the equation. Formulæ should be deduced from relations actually seen, so that the pupil may discriminate between the abstract formula and its concrete practical relations to real things.

The boys of our school will have several weeks of constructional geometry work at the beginning of their mechanical drawing. This helps to lay a good foundation for demonstrative geometry, as well as to be of great practical value in their future use of drawing.

Supplementary exercises are given to show some of the uses of algebra in the natural sciences. Correlation between algebra, geometry, and the sciences is shown wherever possible. The graph and some of its uses are taught in linear equations and in easy quadratic equations.

In geometry the pupil will to a considerable extent originate his demonstrations instead of simply *memorizing* those of the author. Model proofs will be given when necessary to teach good form and logical arguments, but as a rule such demonstrations will be given only when the pupils would otherwise be at a loss to know how to proceed.

When a class in trigonometry has developed the working formulas it does most of its problem work in the field with the transit, leveling rod, and tapeline. Much of the work is plotted to scale. This work is found to be interesting and practical.

FIRST YEAR.

First term. Algebra to simple equations, including the application of factoring in simplifying fractions, and in solving easy quadratic equations of one unknown quantity.

Second term. Algebra to ratio, including easy exercises taken from the physical and chemical laboratories. The simpler uses of the graph will be taught during this term.

SECOND YEAR.

First term. The first two books of plane geometry. Special attention will be given as to what constitutes a rigid proof. Suggestions are given on methods of attacking propositions and problems. Neat, accurate form work will receive special attention, and pupils will be required to bisect lines, angles, erect perpendiculars, and draw parallel lines by *actually using compasses and ruler.*

Second term. Plane geometry completed. We expect most pupils by this time to be able to do considerable work on their own initiative; to be able to have some determination to master a proposition set before them.

The practical applications of the subject are shown whenever possible to do so.

THIRD YEAR.

First term. Solid geometry.

Second term. Elementary algebra completed. This includes ratio, proportion, variation, imaginaries, series, partial treatment of binomial theorem, logarithms, review.

FOURTH YEAR.

First term. (1) Plane trigonometry. Development of formulas. Fieldwork with transit, leveling rod, and tapeline.

(2) Higher algebra.

Second term. (1) Descriptive astronomy. A brief, simple, and accurate account of the heavens as they are known to-day. It is intended only for high-school pupils, and to give some information on the subject that is needed for the person of ordinary culture. Interesting facts will be studied, but no attempt can be made to gain any clear conception of the processes by which the fundamental truths of astronomy have been established. The methods of discovering the wonderful truths of this subject belong to the advanced student.

(2) Higher arithmetic for those who expect to become teachers.

NOTE.—The formation of these classes depends on the number of pupils who can arrange their programs so that it would justify the taking of a teacher's time from the crowded classes in first, second, and third years.

These quotations indicate what is done in certain schools which have paid much attention to the development of methods.

On the other hand, there are two sources of evidence for the statement that the schools *as a class* have not developed special methods of instruction. The one is the negative answer in the answers to the questionnaire; the other is in the lists of textbooks. The use of texts dominates the instruction in the majority of American schools, and hence the nature of the text is to some extent an index of the character of the teaching. When one finds, as is actually the case, a widespread use of a few texts in which the treatment is essentially abstract and the problems constructed with small reference to other than formal requirements, it is a justifiable inference in the absence of evidence to the contrary that the instruction in the schools using these texts is not markedly different from that in general secondary schools using the same texts, and this inference is strengthened by detailed statements of matter covered, which not infrequently are extracts from the tables of contents of these texts.

While the use of texts, and, indeed, of traditional texts, is general, the newer schools, especially those in which the industrial id prominent, are to some extent breaking away from these texts and the corresponding instructional methods. A number of schools have prepared collections of problems taken from shop practice or from matter contained in technical periodical literature. Unfortunately but few of these are accessible in published form.

As to the process of instruction, it would appear that the method of holding recitations upon assigned textbook matter is not extinct. This method, which renders the recitation merely an oral examination, is, however, giving place to the method of development of new matter by questioning on the basis of the pupil's fund of knowledge. The use of problems as an instruction to new matters of theory is apparently more common than the use of problems solely as applications of a didactically presented theory.

It must be said, however, that the evidence on this point is meager and conflicting.

It must be borne in mind, moreover, that even approximate uniformity of method does not exist. The nature of the school, the necessity of preparing students for external examinations, the preparation and personality of the teacher—all have their influence on the method of instruction.

The laboratory method of instruction can not be said to be widely used. The term may be taken as denoting the use of experimental processes devised for the purpose of discovery or emphasis of mathematical truths. The mathematics is the final goal, the physical process the means. The method may be illustrated by the following quotation:

> Algebraic problems are developed from the laws of percentage from the sides, angles, and areas of polygons. The laws of the lever and of beams are established by experiments in the classroom and are made the basis for the development of the fundamental processes and the laws of sight. Drawing to scale gives many problems in similarity of triangles and in ratio and proportion.

Allied to the laboratory method, but distinct from it, is that which may be termed the "shop method." Here as in the former physical processes are used, but the physical result is the final goal, the mathematical truth, a thing which is introduced and developed because it becomes necessary to the accomplishment of that end. The method may be illustrated by the following quotation:

> WORKSHOP MATHEMATICS.
>
> After a thorough review, which demonstrates to the pupil and the instructor the ability of the former for this important branch of his trade, the apprentice is led, by the solution of practical problems, through the necessary portions of arithmetic, algebra, geometry, and trigonometry. These subjects, when presented to pupils in the abstract, are frequently beyond their mental grasp, but when connected with their trade practice the absolute necessity of this knowledge becomes plain; the student then attacks the problem from a new standpoint and with renewed vigor, and succeeds in mastering the difficulties.

All the problems in this branch of apprenticeship, also, are specially prepared by the instructors and printed by neostyle. Much of this work is required to be done by the students as home study. Lectures and shop talks supplement the workshop mathematics.

It is, of course, scarcely necessary to add that the distinction between the two methods, as they are actually used, is not absolute. It is a difference in the position of the center of gravity of the instruction, which, if great, may amount to a qualitative distinction.

Some of the more distinctively vocational schools and all the commercial schools emphasize to a greater extent than the others the matter of computation, for the evident reason that with them the numerical result is a matter of technical importance.

In the commercial school particularly unremitting drill on the elementary processes of arithmetic is an essential feature of the instruction. Naturally the proportion of time expended on such drill depends on the breadth of the curriculum, and is greatest in the private commercial schools, where the only mathematical subject, commercial arithmetic, is essentially a technical subject. In the "high schools of commerce" the drill is important, but the broader curriculum permits emphasis on the theoretical side of the subject. Naturally, in all the commercial schools much attention is paid to the use of material drawn from commercial practice.

PREPARATION OF CANDIDATES FOR TEACHING.

In the greater number of schools a considerable proportion of the teachers are graduates of "normal schools," or schools of college grade. In many instances they are graduates of engineering schools, and, in a few cases, they possess the doctor's degree (obtained in course). In the trades and industrial schools some of the teachers have had experience in a trade or in one of the engineering professions; in the commercial schools many of the teachers have had experience in business houses.

The question of the preparation of teachers is the gravest which these schools have to face, particularly those in which the trades or industrial element is predominant. "Normal" courses for teachers of "manual training" exist, but there appears to be as yet little provision for the training of men who, with an adequate knowledge of the technique and problems of a trade, also possess a thorough knowledge of the science of mathematics and of the theory and practice of education. Such men exist, but they are few in number and are the result of accidental circumstances, not of organized instruction. A few institutions, notably Teachers College, Columbia University, are now offering courses designed to meet the needs of persons preparing to teach mathematics in the secondary technical schools.

PART II.

MODERN IDEAS CONCERNING SCHOOL ORGANIZATION.

The manual training, the industrial, the trades, the agricultural schools, and the high schools of commerce are, in their present form, essentially new types of school which have been developed as the result of the movement to render instruction more concrete and immediately available.

COEDUCATION.

The schools considered by this committee are fortunate in that the vexed question of coeducation presents itself in so objective a manner as to permit sane discussion, in some respects at least. The question of the simultaneous attendance of the two sexes at the same institution is one which may be regarded as settled in America by custom. This question need not concern us here.

On the other hand, in proportion as the schools are distinctively vocational, the question of segregation rather than coeducation becomes important. Segregation becomes imperative when the vocational element is predominant and differs for the two sexes. Whenever in the schools considered, correlation of the mathematical instruction with that in the technical subjects is regarded as essential, the difference between the technical interests of the two sexes is found to be so great that the successful application of the principle of correlation renders segregation necessary.

On the other hand, in the commercial and agricultural schools the interests of the two sexes are so nearly identical that segregation in the classes in mathematics is neither imperative nor usual. The same considerations hold with reference to the sex of the teacher.

MODERN TENDENCIES CONCERNING THE AIM OF INSTRUCTION AND OF THE BRANCHES OF STUDY.

There is a tendency to omit so-called "useless subjects," but the criteria are variable and often contradictory. The tendency, however, is to omit subjects regarded as involving complex manipulation or difficult theory unless they are of essential and immediate vocational importance. For example, the extraction of numerical cube root, partial payments, etc., are omitted from the courses in arithmetic given in the agricultural schools. On the other hand, the commercial department of a high school omits as useless the subject of graphs from its course in algebra. In general, however, the tendency is to retain the traditional content of the courses of the general secondary school, except in those schools whose courses are arranged with reference to immediate technical availability.

The general tendency is, moreover, not to increase the content of the courses or to replace old subjects by new except in so far as the so-called "workshop mathematics" may be regarded as a new subject. Such courses are new in their point of view and their concrete material, but not in their mathematical elements.

In this connection may be mentioned, however, the general tendency to introduce elementary trigonometry into the curriculum because of its numerous applications to shop problems and to surveying.

EXAMINATIONS.

There appears to be no noticeable tendency to abolish examinations but rather to subordinate them to the regular work.

METHODS OF TEACHING.

With the increase in the size of the cities and the centralization of industries has come a decrease in the fund of general knowledge which is available in the child as a basis for mathematical instruction. In the days of the small shop in the small town the artisan's boy frequented the shop and used his father's tools. He learned in a desultory and accidental way, perhaps, but nevertheless he learned to plan, measure, and build, and became acquainted with the materials and methods of the various forms of industrial activity. From all this the city boy of to-day is excluded.

In consequence of this the concrete basis which the boy formerly obtained for himself, and unconsciously, must now be systematically provided by the school. The mathematically ill-equipped teacher of an earlier period had no suitable mathematical superstructure to erect on the excellent foundation provided by the boy; the better-equipped teacher of to-day finds the foundation inadequate to support the structure he is prepared to erect. The consequence of this essentially economic change is that systematic intuitive instruction in the school is becoming increasingly necessary and is supplied with increasing frequency, e. g., by the use of "laboratory" and "shop methods" and by the use of concrete problems.

The technical secondary schools from their very nature tend to adapt their instruction to this need more readily than do the general secondary schools, and with apparent success. One school reports:

> The boys take hold of mathematics as if they "needed it in their business." Our boys are not exceptionally bright, and yet the best section of girls in a "regular" high school would not be able to keep pace with them.

Along with this tendency to emphasize the intuitive element in instruction, there is the conservative tendency, partly due to inertia and partly to external academic requirements, to emphasize the abstract element.

In view of the lack of central control of American schools, the existence of these two conflicting tendencies, especially the latter, can not be regarded as otherwise than fortunate for the future of mathematical study and research in this country.

The general secondary schools already feel the competition of the technical secondary schools. The danger lies in the possibility that the attractiveness of the intuitional and immediately available element of the instruction in these technical schools, whose ideal approximates to that of the trades school, may so diminish the abstract and logical element in the mathematical curricula of all the secondary schools, general as well as technical, as to hinder the progress of mathematics as a science in this country.

The lack of concrete basis for mathematical instruction is the cause of a tendency, expressed in the curricula of certain schools, to precede the demonstrative work in geometry by work in "constructive" or "inventional" geometry. The circular of one school says:

> This study (geometry) is, first of all, inventional. With ruler, dividers, compass, and protractor, the pupil is taught to draw geometrical figures and then to study and understand them. After a term's work in industrial geometry, the pupil studies plane and then solid geometry with an interest which would not be possible otherwise.

The age of the pupils in the schools considered is such that, once they have become familiar with the elementary geometric concepts through their work in constructive geometry, the logical element of the subject can be made predominant.

Material aids to mathematical instruction are of course much in evidence in schools which make use of the "laboratory" or the "shop method" of instruction. In geometry and trigonometry, when climatic conditions are favorable, outdoor work is occasionally used. In solid geometry the use of models made by the pupils is not infrequent.

Excepting in the commercial schools, where the matter is one of vital importance, the matter of computation does not receive the *general* attention one would expect in schools of essentially vocational purpose. A few schools, however, lay much stress on the matter, and one, at least, offers a course on the subject, the outline of which may be quoted:

> COMPUTATION, B class. (Applied Mathematics.)
>
> A course in the interpretation and application of standard engineering formulæ, abbreviated methods of calculation, the use of mathematical tables, approximation by graphical methods, and the use of computing devices. The solution of practical problems.

The aims of the course are:

1. To give the student some adequate acquaintance with computing methods.
2. To develop in him at the same time accuracy and speed.
3. To cultivate the ability to estimate results with a reasonably close degree of approximation.
4. To minimize labor in his calculations.

The experience of the vocational schools indicates that the solution of the problem of giving mathematics a better place in popular instruction and of reacting against the prejudices against the science lies in bringing the subject into such close relation with the activities of daily life, especially those of an industrial nature, that the necessity of a knowledge of the subject is felt. From the standpoint of the progress of the science this is the valuable element in "workshop mathematics."

The dangerous element in "workshop mathematics" is not fundamentally distinct from that which is so often the bane of abstract instruction and against which the representatives of the secondary technical schools so emphatically protest, namely, excessive formalism. By formalism is here meant the unthinking and mechanical execution of mathematical processes without regard to the significance of the data, the operations, or the results.

This formalism may be illustrated by the following problem taken from a published collection that is somewhat widely used: The dimensions of the parts of a rather complex combination of crank, screw, and gears are given, and it is required to find the weight which can be raised by a force of 60 pounds applied to the crank. The mathematical work involved is merely the numerical evaluation of a rational fraction the factors of whose terms are given. The published answer is 203,575.68 pounds; that is, a weight of a hundred tons is given to the sixth part of an *ounce*. It is evident that such a result can be obtained only by a mechanical and unthinking use of the mathematical processes involved, and without the slightest consideration of the significance of the concrete elements of the problem. This is formalism pure and simple, and it is the more pernicious in that it masquerades under the guise of "shop mathematics" and claims to be an example of "how to apply mathematical principles, rules, and formulas to the solution of such (i. e., shop) problems."

There is a desire among some of the teachers of mathematics in the secondary technical schools to break down the conventional barriers between the several branches of mathematics, and in a few cases this desire has been realized. The principal difficulty mentioned concerning this movement appears to be the lack of textbooks designed for such combined courses, a difficulty which is not inconsiderable by reason of the dominant position of the textbook in American mathematical instruction. A few such texts, however, have been published.

There are administrative difficulties, particularly in the case of schools which articulate closely with the grades on the one hand and the colleges on the other, and these difficulties, while not mentioned by the schools, have proved a serious barrier to the movement in the colleges. The conservatism of teachers also retards the establishment of these combined courses.

It would appear that the technical and industrial schools offer unusual advantages for the development of combined courses, because of the fact that, in the newer ones at least, the articulation with established schools is less close and the force of tradition less strong than in the general secondary schools. It must be remembered, however, that these combined courses are of comparatively recent origin, while the traditional courses are the result of a long period of evolution. The combined course is in the experimental stage, and for this stage of its evolution the secondary technical schools offer, for the reasons just mentioned, a favorable culture medium.

Wherever the courses are separated it appears that the study of the elements of algebra precedes that of plane geometry. The relative position of the second course in algebra and that in solid geometry is variable.

RELATION BETWEEN MATHEMATICS AND OTHER BRANCHES.

While *systematic* coadaptation of the courses in mathematics and those in other subjects is not general, there is a strong tendency to make such adaptation to a greater or less degree. The tendency may, and sometimes does, take the form of emphasis on the application of mathematical results at the expense of the logical and demonstrative element of mathematics and of its dignity as an independent science. The "pocketbook engineer" has his counterpart in the secondary schools. More frequently, however, the tendency finds a more rational expression in the form of emphasis, in the mathematical courses, upon problems derived from other branches. These problems may serve as an introduction to the demonstrative work or as an application of its results.

The difficulties and dangers in the working out of this tendency are precisely the same as those which arise in a similar situation in the higher schools. Unfortunately, neither the teacher of mathematics nor the teacher of the technical subjects is omniscient. The one lacks technical training, the other a thoroughly grounded knowledge of the science of mathematics.

A study of published collections of problems used by some of the schools indicates that the mathematical principles involved in the technical problems considered in their courses are, for the most part, of a very elementary character. In geometry, the propositions of congruence and similarity, the theorem of Pythagoras, and the mensurational theorems; in trigonometry, the definitions and elementary properties of the functions with their use in the composition and resolution of vectors; and in algebra the fundamental operations and the solution of linear equations and binominal equations of lower degree form the theoretical basis for the greater part of the problems in question. The problems arising in surveying, of course, require more extended knowledge of trigonometry, and the varied problems of the machine shop involve algebraic principles of a more advanced character.

For example, problems on the efficiency of hoisting devices (friction considered) and in the design of cone pulleys involve geometric progressions; problems of gearing and screw cutting involve indeterminate equations, Euclid's algorithm of the greatest common divisor and continued fractions.

REPORT OF SUBCOMMITTEE ON SECONDARY COMMERCIAL SCHOOLS.

Sources of information.—This report is based on statistical information obtained by means of questionnaires and on other data available to the members of the committee, especially the chairman, as members of the instructing staffs of commercial schools.

The report was prepared by the chairman of the subcommittee in consultation with the other members and with the chairman of the committee on secondary technical schools.

Aim of the report.—As some of the work of the schools considered does not greatly differ from that of general secondary schools the subcommittee has confined itself largely in this report to the consideration of the points of difference between the work of the commercial and of the general secondary schools—the nature, cause, and results of these differences.

Classification of schools.—The schools considered by the subcommittee fall into three classes, viz, high schools of commerce, commercial departments of general secondary schools, and private commercial schools (the so-called business colleges).

The private schools were first in the field; their primary aim was and is preparation for immediate vocational activity. Though they are, therefore, essentially of the same nature as "trades schools" and are largely conducted for profit, the committee is impressed with their educational value and the professional spirit of their instructing staffs.

There are many of these schools throughout the country. The fact of their existence is proof of the demand for the kind of education they offer. It is a further testimony of the work done by these schools when it is cited that some cities, as Berkeley, Cal., already offer a two-years' course in commercial subjects. Boston, Mass., has just voted to establish a central clerical high school, to be in session from 9 to 5; its scope of work will be that usually offered by the best business colleges.

The commercial department in the general high school is the natural outgrowth of the success of the private commercial school, just as earlier in the history of our country the general high school was the outcome of the success of the academy. Moreover, just as the private academies began to go out of existence with the success of the general high school, so that now but a comparatively few of those in existence from 1850 to 1860 still remain, in the same way it is probable that the public schools will do more and more of the work now being done by the private commercial schools. And just as there are now some academies still in existence, and in a most healthy condition, so is it likely that we shall always have our private commercial school; but it is improbable that we shall have all that we have at present.

The same observation which is made here with regard to the pioneer work of the "commercial college" is manifest in the history of many features of our present educational system; the need is first shown by experiment carried by private enterprise, either philanthropic or commercial; then the public-school department, hitherto passive, becomes eager to incorporate the private success into its own field of activities.

Since the commercial department of the general high school aims to do the work of the private commercial school, there will be but little to report in regard to them in addition to what will be reported for the private school beyond the fundamental differences between the two kinds of schools in all respects.

The commercial high school is but one step beyond the commercial department and must be from the nature of affairs restricted to the larger cities. However, this step to the separate high school is a long one. The "high school of commerce" expects to give a better fitting for business life than either the private commercial school or the commercial department can; better than the one because the course is longer and its scope is broader; better than the other because the work of the four years in the high school is much more specialized.

COURSES OF THE SEVERAL TYPES OF SCHOOLS.

In the private commercial school the length of course varies from three months to two years, depending on the preparation and wish of the pupils. The usual course, however, is for one year. Certificates or diplomas are given for work covered. The same work is given for both boys and girls, as would be expected since they are found in the same class. The entrance requirements are not as clearly defined as for the public secondary school; the scheme is rather to put the pupils into those classes where they can take up the work to best advantage. The age of the pupils varies from 14 to 20, as a general rule; both younger and older pupils, however, will be found in attendance.

In the commercial department of the high school, the course is of four years' length; the studies in the commercial department are but a part of the student's studies; the others are taken from the general course of the school. The diploma given at the end of the course is the general school diploma and does not usually specify that the pupil is a graduate of the commercial department; it states rather that he is a graduate of the school; the diploma is the same as that given to the graduates of all the other departments of the school—this statement holds true so far as facts have come to the observation of the members of this committee. The work of the first year for pupils in this course does not vary materially from that of the other pupils of the school; accordingly, the same entrance requirement holds for all—that they satisfactorily complete the grammar-school course. The average age is from 14 to 20 years from entrance to graduation.

In the commercial high school, usually called "high school of commerce," the same general consideration for age and entrance holds true as in the case of the commercial department. The curriculum, however, is more specialized. The aim of the school is to prepare for a commercial life in a broad sense. The commercial departments prepare more for secretarial and clerkship positions and make bookkeeping, stenography, and typewriting the courses around which the work of the school centers. The schools of commerce make the economic sciences and courses the subjects around which the work of the school centers. The other subjects are studied, but are given but comparatively small emphasis in working out the aims of the school. Business men's organizations connected with such schools are of great value to them.

THE AIM AND SCOPE OF THE MATHEMATICAL INSTRUCTION.

The only branch of mathematics that is taught in the private commercial school is commercial arithmetic—sometimes called business arithmetic. The placing of commercial arithmetic as one of the branches of mathematics is one of the points of difference between the American and the German practice, for in Germany it is considered as one of the branches of the commercial studies. The aim of the work is to give drill, constant drill, in the ordinary operations of business, so as to secure habits of accuracy, speed of computation, and skill in mental operations.

There are usually five recitations per week, and the usual length of the recitation is 45 minutes. Some schools have recitations, however, that are one hour in length. The work in commercial arithmetic in these schools is made to correlate more with the work in bookkeeping than with any other subject. The teachers in these schools frequently make the complaint about the previous preparation of their pupils in arithmetic, that they lack in accuracy, speed, and knowledge of practical problems. Some schools report, however, that the foundation which they have in mathematical training is excellent for the drill that the business college wishes to give them. The comment made by the teachers in these schools is also made by many of the teachers in the other types of schools.

In the commercial departments the same subject is offered as is offered in the private commercial school—commercial arithmetic. The subject is nearly always elective in the school, but required for those who wish to take the commercial course. The length of recitation period varies from 40 to 45 minutes usually, and the number of recitation periods varies from two to five per week throughout the year, or the equivalent of it. The work is most often taken in the second of the four years of the pupil's course in the high school. It is sometimes, however, taken up in the first year of the course. In schools where the pupils also take algebra either the arithmetic is carried on at the same time that the algebra is or it is taken up after the pupils have had one year of algebra. The latter is more often the case. Accordingly, the usual age of pupils taking this subject is 14 to 16 years. In the New York High School of Commerce the subject is given by the commercial department; in Boston by the mathematical department.

In such schools as these the commercial arithmetic is usually correlated with the work in bookkeeping; less often it is correlated with work in physics. One school reports that it is made to correlate with the study of commercial law. It is very evident where this can be done, since the discussion of many problems arising in commercial arithmetic involve questions of both custom and law.

Where algebra is offered in these schools the pupils of the commercial departments are found in the same classes that the pupils of other departments are found in. Hence the report given by the committee on the general high school as regards algebra will be applicable to the algebra of the commercial departments. This same observation holds true for geometry and trigonometry.

In the commercial high school, however, mathematics is given more time. In the first year algebra is taken up for either four or five periods per week, with recitation periods of from 40 to 45 minutes in length. The algebra is offered largely as a vocational subject, and the problem is made the central thought in the development of the subject; the equation is studied in so far as it will help in solving the problem, and the different processes are taught only in so far as they help in solving the equation. The general aim is to study the applications, and only such principles of the science as help one to understand the applications.

The work in this subject is correlated with the other work of the school. It is evident where it is correlated with arithmetic, from the close relation existing in the nature of the subject, it is correlated with the work in science, in drill work, in the formulas of physics, and in problems taken from the field of natural science. In the use of squared paper and in the graphical representation of simple statistics, it is correlated well with the work in commercial geography and economics; in the matter of requiring the same standards of good penmanship that are exacted in the penmanship classes and in the matter of rapid calculations, invoicing, and the various applications of percentage, it is correlated with the business technique classes; in requiring explanations, oral and written, expressed in good English, it is correlated with the work of the English department.

The description here given for the method of teaching algebra is taken from the usage of the Boston High School of Commerce; it applies with equal force to a great many general high schools of the country. It would be very hard to present a statement about the teaching of algebra that would be above censure; some criticism would be sure to come from some part of the country. There is a feeling of unrest throughout the country as regards the teaching of algebra, and eagerness to make the subject more significant than it has yet been in secondary instruction.

The work in commercial arithmetic has all the features of the same work done in the private commercial schools and in the commercial departments. The time allowance is the same as for algebra. Since the merchants are much interested in these schools, practical material is available from them which would be otherwise impossible to obtain. The stores of the city are the laboratories of the students of the commercial high school. The books and accounts of such stores have much material that is of the utmost value to the school, and that material is being sought out by the teachers of the commercial high school, and already quite a little has been brought into use in the classroom.

Besides the drill in rapid and accurate performance of arithmetical operations, this work aims to give drill in the real significance of numbers, drill in habits of sustained attention and concentration of effort, and drill in specific problems brought in from the business houses. The general aim is to give drill rather than to teach the pupils anything new. The subjects emphasized are the fundamental operations applied to integers, common fractions and decimal fractions, percentage, interest, stocks, bonds, sinking funds, insurance and taxes, and equation of accounts. Arithmetical operations which are seldom found in business are omitted.

This work is correlated with other departments of the school in many ways. The extensive study of significant statistics having to do with the commercial life of the city, State, or Nation, and the graphical representation of the same in all the more common forms of graphics are of great value to the pupils in their economic studies later on, as is likewise the study of actual problems in stocks, bonds, and sinking funds. The teachers of bookkeeping and commercial arithmetic are constantly in communication, so that their work may be of much assistance to each other. The work of the English department is emphasized as in the case of algebra. The work is correlated with the science department in the manipulation of some of the practical problems encountered in the science work.

Geometry and trigonometry are sometimes studied, but they are studied for their cultural rather than for their vocational values; accordingly there is a freedom of method and choice of theorems which would otherwise be impossible.

It is pointed out that a school which emphasizes the practical side of algebra should also emphasize the practical side of geometry and trigonometry. This statement is true, and it is quite probable that some time in the future we shall have a course in these studies more applicable to the commercial high school. This, however, is a problem which has not yet been worked out in connection with so comparatively recent a departure in education as the commercial high school.

The preparation in mathematics of pupils entering the commercial high school is the same as that of those who enter the classical high school or the general high school. Since these features of the American educational system should be more properly treated in the reports concerning those schools, they will be omitted here.

In both the private commercial school and the commercial department, special desks are provided for the students; these desks are made to conform as much as possible to commercial usage. In the commercial high school these desks are found in the department of business technique.

In some schools which have no commercial department a half year of advanced arithmetic or commercial arithmetic is offered during the senior year, less often during the junior year; this course covers such essentials of everyday arithmetic as every high-school graduate is supposed to be prepared with.

THE EXAMINATIONS.

In most States diplomas from the school are not dependent on a final examination of the work covered during the course, nor are the examinations at all of that nature. They are more commonly given every week, two weeks, or month on the work covered during the time since the last examination. The examinations are only incidents of more or less importance in the progress of the work.

The regular daily work is considered of much more importance in estimating the pupils' progress and educational worth than the examinations are. This principle holds true of all three kinds of schools.

THE METHODS OF TEACHING.

Textbooks are very freely used both for class work and for home work; and many excellent books on commercial arithmetic have been written by the teachers in these schools, particularly by the teachers of the private commercial schools. Since the general aim of the work is to give accuracy and speed, much oral work is given for mental drill. The textbooks are made up of the kind of problems that are met with in the business activity of the country as far as the author has discovered usage and custom of business houses.

Interest tables, simple and compound, are the only kind of tables that find much use in the arithmetic work; a few schools report the use of logarithmic tables. The Boston High School of Commerce advocates their use in the commercial arithmetic work, by the observation of their use in statistical offices by people who have never studied any mathematics beyond the arithmetic.

Many of the private schools, fewer of the public schools, report the possession of adding machines. This is not surprising when we consider how recently such machines have come into general commercial use. It is significant, however, that our schools are beginning to recognize that the adding machine is as necessary to modern business as is the typewriter. Instruction on the latter forms a recognized part of every commercial course, and within a few years the skillful operation of the adding machine will doubtless be taught in all the well-equipped commercial schools.

One school reports the possession of a cash register and loose-leaf ledger. Other kinds of calculating machines are seldom, if ever, found in the schools.

Some teachers in the commercial high school report the use of the laboratory method to good advantage. By this method a set of exercises is chosen, in some such subject as common fractions, from the commercial life of the city, State, or Nation. Each pupil is given a separate problem—an experiment—on which to work. Inasmuch as all problems are different, the pupil is thrown on his own resources; since results are proportionate to efforts expended, such work offers an incentive to ambitious pupils for extra work.

Sets of exercises have been compiled for such subjects as addition and subtraction, multiplication and division, common fractions, decimal fractions and percentage, exchange work, stock invoicing, marking goods, and sinking funds.

The methods in algebra vary from the usual course in that subject as much as is consistent with the different aim of the subject; the mental exercises are more particularly drilled in the commercial high school than in the general high school. Ratio and proportion are taken up early in the course, since the work is so closely related to the work in equations.

Geometry is taught quite irrespective of college entrance requirements.

PREPARATION OF CANDIDATES FOR TEACHING.

But a few of the teachers in private commercial schools are college men. The preparation of the teachers for the work of instruction has been by attending the private commercial school, or by having attended a commercial department in a general high school, or by having had actual business experience. Many of the teachers in these schools have had this business training, and, of course, this fact gives them one excellent qualification for this particular kind of instruction. Teachers are quite often found in these schools who have had practical training in higher accounting or have pursued courses in the subject.

The preparation of teachers for the commercial high school is of higher grade, from an academic point of view, than that of teachers of the other two departments. The best teachers for this particular kind of a school are yet to come. The school is a comparatively recent innovation; accordingly, the demand for teachers for this special kind of school is comparatively a new one. They nearly all now have good academic training; what they will need in the future is more business training. The teachers are taking the problem seriously, too, and are making decided and effective steps to supply their deficiency in these regards.

The preparation of the teachers in the commercial department of the high schools, of necessity from the nature of affairs, has been much the same as that for private commercial schools. Preparation has been mainly in the private commercial schools and from the commercial departments of the high schools. A smaller number by far have obtained business experience; this is probably due to the lack of salary inducement more than to the nature of the problem.

In the past, few college men, or women, have gone into this line of professional work; but with the present tendency toward vocational education, so manifest in the country, more college men are undertaking it.

A marked advance was made two years ago when the Salem (Mass.) State Normal School offered both pedagogical and vocational courses in the commercial subjects. This course has met with such success since its institution that the course has been lengthened to three years, with a corresponding addition of opportunities offered to the students. A few other State normal schools in the country had previously offered the vocational courses. The Albany (N. Y.) State

Normal College has since then offered the same kind of courses that the Salem school offers. The private normal school at Valparaiso, Ind., has long conducted training courses for commercial teachers, as have also several other private normal schools of the Middle West. It is further interesting to note that the Teachers College of New York City is preparing to inaugurate (1910–11) a course in commercial arithmetic, and later one in stenography and typewriting. Simmons College for Girls, of Boston, for the past few years has also been meeting the demand for instruction suitable for preparation for teachers of commercial departments of high schools.

It can readily be seen that a great many teachers of commercial subjects in the future will get their preparation from these normal schools. It is well that these schools offer this opportunity, for the demand for commercial education becomes more pronounced year by year, and there is constant demand for more and better trained teachers.

REPORT OF THE SUBCOMMITTEE ON SECONDARY AGRICULTURAL SCHOOLS.

The agricultural high school is of recent origin in the United States and owes its existence to several causes. Probably those most potent are the growing conviction in the mind of the rural community that it must furnish some form of education beyond that given in the district school of grammar grade, the recent awakening to the necessity of industrial education of some form for every community, and the attempt to induce the General Government to appropriate funds toward the support of agricultural high schools in each congressional district.

That the concentration of school districts in the country, with provision for the transportation of pupils from a sufficiently large territory to form a graded school, has materially increased the efficiency of the rural schools is undisputed. That the same principle extended to the secondary school will be successful is expected by the rural communities which have undertaken the task of secondary education.

These secondary schools, started in agricultural districts and maintained in practically every instance by public funds, in many cases by the State itself, have attempted with more or less success to adapt the work of the school to the principal industry of the section—that of agriculture, and accordingly they have formed their curriculum to give prominence to the sciences underlying that industry and have curtailed the instruction in other lines, most noticeably perhaps that of foreign language.

This brief statement is made by the subcommittee in order that the result of the questionnaire sent out may be better understood.

Your subcommittee sent to the department of public instruction of nearly every State a request for the list of secondary agricultural schools within the State, and in practically every instance a reply was received giving the information asked for. In many instances schools not of secondary grade were mentioned, as well as schools in which "some" agriculture was taught, but which were not styled agricultural schools. The subcommittee, believing that an inquiry into the teaching of such schools was not within their province, rejected all schools mentioned which did not seem to come under the head of secondary agricultural schools. As a result of the inquiry, a list of 65 schools was obtained which seemed to embrace all that properly came under the class delegated to this subcommittee.

The distribution of these schools was of interest to the subcommittee. About half the number were in the Southern States, and nearly as many in the middle Western States, while the East and Far West were represented by an occasional school. Some of the leading agricultural States seemed to have no schools of this kind, notably Iowa, Illinois, Missouri, and Kansas. It was found that schools of this class existed in only about one-fourth of the States, and that in but 8 States, of which 5 were Southern States, did they seem to be established by districts.

A questionnaire of limited scope and admitting of easy reply, covering the source of students, method of support, kind of control, special aim of school, general and mathematical curriculum, methods of admission, and special questions on the instruction in mathematics, was framed and sent to the schools listed, and replies were received from about 40 per cent of the number, and judging from the replies, in most instances from typical schools of the different sections. Based on these replies, the following deductions and comments are given:

The schools are generally located in the country, or in small rural towns, and draw their students largely from the homes of the farmers, although a number report that the students are recruited from all classes. They are all supported by public funds. Some have State support and others are maintained by local taxation. In most instances both State and local funds are used. They are practically all coeducational.

The predominant aim seems to be to fit the pupil for farm life, and to emphasize those subjects bearing on agriculture and domestic science. In many instances the avowed purposes of the school are to create a deeper interest in things agricultural, to direct the interest of the pupil to the problems of the farm, and to hold the attention to the advantages of rural life as compared with those of the city.

To attain these ends the curriculum is more or less affected. Special stress is laid upon the sciences, and departments bearing directly on agriculture and domestic science are introduced. A number report that the curriculum is not materially affected, some that it is more practical or more scientific, others that it is industrial, and one that all subjects are taught from the standpoint of the farmer. To provide for the vocational subjects in many instances the amount of foreign language taught has been curtailed.

The mathematical curriculum is reported by many schools as not at all affected by the special object of the school. A few report that the amount of mathematics is reduced. One reports more geometry and surveying than would otherwise be given. Quite a number report that the work is more practical and that advanced arithmetic and farm accounts are included.

The replies to the question asking how the specific aim and object of the school affected the method of teaching mathematics were so diversified that no general conclusion can be given. About a third of the replies state that the methods are more practical, but only a few state in what way—that is, whether in subject matter and character of problems or in methods of teaching. About a fourth of the replies state that the method of teaching the subjects is not affected. Several make no reply, probably because the methods are unaffected. One states that the laboratory method is used and one that the work is mostly individual on account of the uneven preparation.

The subject of the correlation of the various mathematical subjects seems to have received but little attention, and but few report any effort in that direction. No attempt seems to be made to correlate mathematics with agriculture, except in the case of arithmetic. A few report that an attempt is made to correlate with physics and with science. In general a favorable opinion of correlation is expressed, although it appears that very little attention is given to the matter.

The use of the laboratory method with mathematical subjects seems in general to be very limited. Where used the reports state that the results are good.

In general the requirements for entrance are the completion of the work of the common school, which varies somewhat in the different localities. Eighth grade arithmetic seems to be about the maximum requirement in mathematics. One reports no entrance requirement excepting a minimum age limit of 14 years for boys and 13 years for girls.

Entrance is generally secured by either examination or certificate, although a few admit by examination only. The work in mathematics in the different schools, while showing a considerable variation, differs more in degree than in subject matter. A majority of the schools present arithmetic of some sort, under the name of practical arithmetic, farm accounts, bookkeeping, mensuration, etc. Practically all include a reasonably good course in algebra. Well-known texts are used and a fair amount of time allotted to the subject. The same may be said of the course in plane geometry, while a number pay attention to the applications as well. Solid geometry is given in quite a large number of the schools, and the time allotted to the subject seems sufficient to do the work satisfactorily.

In about 25 per cent of the schools replying trigonometry is given, and in a somewhat smaller number, plane surveying.

The relative stress placed upon mathematical dexterity, analytical power, accuracy, and logical keenness seems to differ widely in the different schools. A disappointingly large number seem to put no special stress on accuracy.

Owing to the recent establishment of this type of school in this country the curriculum is yet in a formative state. Undoubtedly a satisfactory course for these schools will be developed, probably as a part of the larger problem of industrial education. On account of its practical character and wide application, mathematics is sure to occupy an important place in this kind of education. That the subject matter, problems, and applications of mathematics to various industries can and should be much better presented than has been done in the past seems obvious.

SUPPLEMENTARY REPORT ON THE INDUSTRIAL SCHOOL OF SECONDARY AND INTERMEDIATE GRADE.

Within the last decade the industrial school of secondary and intermediate grade has assumed an important place in our system of education.

It has been felt that both elementary and secondary schools have made it too generally their aim to prepare the pupil for eventual higher education and have in consequence laid too little stress on preparing him for immediate vocational efficiency. To this may be attributed the sudden decrease in school registration at the end of the period of compulsory attendance.[1]

To satisfy this demand for vocational education of intermediate and secondary grade numerous technical and industrial schools have been established and are being established in all parts of the country.

In order to determine the nature of the mathematical curricula of these schools, and in particular to determine what mathematics their authorities consider essential for industrial efficiency, the following circular was sent to about 40 schools listed in Bulletin II of the National Society for the Promotion of Industrial Education:

I. What is the mathematical preparation required of a candidate for admission to your school?

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[1] Massachusetts Commission on Industrial and Technical Education. Report, 1906.

II. What textbook, if any, do you use in each branch of mathematics taught in your school?

III. Is the mathematics in your school similar in scope, content, and method to that in the ordinary academic secondary school?

IV. If it is not, is it practical, applied, or shop mathematics?

V. What topics, parts, or subdivisions of algebra, geometry, arithmetic, etc., do you include in your course in mathematics?

VI. How much time (hours a week, weeks a year, and years) do you devote to each branch of mathematics?

VII. Can you furnish me with a few specimen problems used by you in the various branches of your practical mathematics?

VIII. Could you send me specimen examination papers which you have set for your classes in the various branches of mathematics?

Replies to these questions were received from 21 of the 40 schools. It appears from the answers that of these 21 schools 2 are of college grade, and hence need not be considered here; 6 are high schools of the usual type, listed as industrial schools because they offer a certain amount of shopwork; 2 are schools for apprentices; and the remaining 11 are really industrial schools.

The replies may be summarized in part as follows:

I.—*Preparation for entrance.*

	Number of schools.
No preparation required for entrance	1
Knowledge of the fundamental operations	2
Mathematics of the first six grades of the elementary school	3
Mathematics of the first eight grades	13

II.—*Use of texts.*

It appears that a number of the schools use no text in certain or in all of the subjects, but that when texts are used they are of the type employed in general secondary schools. The results in detail are as follows:

Subjects.	Number of schools using—		
	No text.	Text.	Total.
Elementary algebra	8	11	19
Plane geometry	9	10	19
Solid geometry	1	4	5
Plane trigonometry	5	5	10
Advanced algebra	....	4	4
Elements of bookkeeping	....	2	2

III.—*Scope and content of course.*

Most of the schools aim at including in their course the mathematical work ordinarily given in the general secondary school. They ordinarily give in addition instruction in such matters as percentage, mensuration, and the use of formulæ.

All claim a scope and content of course more extensive than that of the general secondary school.

IV. *Is the work practical, applied, or shop mathematics?*

The schools all claim that it is eminently so.

VII. *Problems.*

There is a marked difference in the character of the problems submitted by schools which are merely general high schools with shops attached and those which are essentially industrial schools. In schools of the former class the problems are for the most part similar to those found in the mathematical tests used in general secondary schools. In a long list of problems submitted by a school of this class, the nearest approach to an industrial problem is the following: "In a hexagonal nut the distance across the flats is 1½ times the diameter of the bolt plus ⅛ inch. The thickness of the head is one-half the distance across the flats. A hexagonal nut is ⅝ of an inch on a side. Find the distance across the flats, the approximate diameter of the bolt, and the thickness of the head." The problems submitted by schools of the latter class are apparently drawn from industrial practice. They involve, however, no mathematics beyond mensuration and the arithmetic of the elementary schools.

If one is to judge the mathematical needs of the secondary industrial schools on the basis of the problems submitted in answer to the questionnaire, it seems that direct use is made of little mathematics beyond arithmetic and certain elementary facts of algebra, geometry, and trigonometry. Nevertheless, these schools apparently cover the traditional mathematical curriculum of the secondary school. It would appear that in the present early stage of their evolution these schools have not yet satisfactorily adjusted the content of their courses to the concrete external demands of the shop, on the one hand, and the more abstract internal requirements of good pedagogy, on the other. There are certain problems frequently arising in machine-shop practice which do not appear among the problems submitted, and which require for thorough comprehension much more than the usual mathematical course of the secondary school. The operation of "compound indexing" on the milling machine requires the solution of a linear indeterminate equation. Certain operations with the screw-cutting lathe require the approximate representation of a given rational or irrational number by the convergents of a continued fraction and the determination of the error of the approximation. The fact that such convergents give the best approximation obtainable by means of rational fractions of denominator not exceeding that of the convergent is of prime importance here. Not only this, but the following problem often arises: To express with as great approximation as possible a given irrational or rational number by means of a product, $\frac{n_1}{m_1} \cdot \frac{n_2}{m_2}$ of rational fractions in which n_1, n_2, m_1, m_2 are comparatively small integers.[1]

In certain industrial schools mathematics, though definitely included in the course of study, is not taught as a separate and distinct subject. It is simply introduced as the student happens to strike some phase of work in the shops or drafting room which requires the knowledge of a certain fact. The fact is brought out for his immediate use. In this way he obtains his mathematics.

The question now arises, How much of this instruction is valuable? How long can the student, so taught, retain the knowledge of the facts given him? Can he, moreover, appreciate the facts brought to his attention?

In the first place, such instruction can hardly develop any originality on the part of the pupil. In the second place, he has not the apperceptive mass, from which the various mathematical facts and relations can be drawn out. At best, he can only be made to see that the statements made to him are plausible. At most, he sees only a glimmer of light, and then comes total darkness. When one realizes how difficult to most pupils are certain propositions in geometry, what must one's judgment be upon a method of teaching which tries to impress merely isolated mathematical facts upon the mind—upon a mind, moreover, which has not been prepared by constant drill to recognize intuitively mathematical relations. The conclusion must be that such teaching can not give the student power or lasting knowledge. Often no better teaching can be done on account of the lack of time, but such teaching should not be designated as instruction in mathematics.

In conclusion it may be said that in schools in which mathematics is taught as a distinct subject, the course has not yet been developed which will provide thorough and adequate preparation to attack with full understanding the problem of the shop. It is doubtful whether such preparation can be supplied with much less attention to the formal and logical element than is now customarily given.

The instruction in schools which have no separate mathematical course must, in its present condition, at best be regarded as an undesirable though possibly necessary concession to the demands of a brief course.

The problem of constructing a course which shall be both mathematically and industrially satisfactory is as yet unsolved, largely for the reason that the schools of both types are as yet only in an experimental state.

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[1] "A Practical Treatise on Gearing," Brown & Sharpe Manufacturing Co., Providence, R. I.

BULLETIN OF THE BUREAU OF EDUCATION.

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UNITED STATES BUREAU OF EDUCATION
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A STUDY OF EXPENSES OF CITY SCHOOL SYSTEMS

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LETTER OF TRANSMITTAL.

Department of the Interior,
Bureau of Education,
Washington, February 14, 1912.

Sir: It is of the greatest importance that careful attention be given to the expenditures made by all governmental agencies. The expenses of certain cities rival in amounts the expenses of State governments. From 20 to 50 per cent of the expenses of cities go to the support of the public schools. Over $200,000,000 are expended annually by the city school systems of the United States. Doubtless thousands of dollars of this amount might be saved each year if each city knew the proportion in which other cities are distributing their money among the various school activities and the unit cost for each activity. Likewise, cities which are confining their endeavors within a too narrow range, or which are spending too little upon a particular object, will have these facts revealed. Dr. Updegraff's study, transmitted herewith, furnishes just such information for 103 cities of 30,000 inhabitants or over. It establishes tentative norms for cities of this size. Its value, however, is not confined to these larger cities alone. It provides a method for the treatment of similar statistics of smaller cities, towns, and rural districts. A superintendent or a fiscal officer may take such data as are found in national and State educational reports, and by following the method observed in this monograph may ascertain the true relation of the expenses of his own system to such others as he desires to include in his study. I therefore recommend the publication of it as a bulletion of this office.

Very respectfully,

P. P. Claxton,
Commissioner.

A STUDY OF EXPENSES OF CITY SCHOOL SYSTEMS.

The object of this bulletin is threefold: (1) To provide those charged with the administration of public schools in the largest cities of the United States the means of making exact comparisons of cost between any two or more cities, with a minimum of effort; (2) to establish certain standards by which any item of expense of any city of 30,000 population or over may be measured and by means of which comparisons of expenses of this and future years may be made; (3) and to present certain conclusions regarding urban education which a study of the statistics seems to establish.

Current expenses, or "expenses," include the costs of conducting a business or an enterprise of any sort which involves expenditures. Set over against expenses are capital outlays. Under this latter head are the costs of the original plant and its extensions and their equipment. Payments to sinking and other funds, interest, and similar payments are not embraced in either of the above classes.

The basal data used in this study were gathered by agents of the Bureau of the Census, who personally visited the fiscal offices of the cities included and with the assistance of those in charge compiled the statistics from the account books and vouchers. The data as reported to the Census Office were placed at the disposal of the Bureau of Education.

The fiscal years of city school systems are not uniform; in fact, there is the greatest diversity in this particular. The closing dates of the fiscal years included in this study lie between July 1, 1908, and June 30, 1909.

The 103 cities of 30,000 population or over whose expenses are presented in the study are divided into four groups. Group I is composed of cities of 300,000 population or over in 1910; Group II, of cities of 100,000 to 300,000; Group III, of cities of 50,000 to 100,000; and Group IV, of cities of 30,000 to 50,000. The number of cities in each of the respective groups is as follows: 13, 20, 42, 28. The total number of cities in the United States in 1910 above 30,000 in population was 184, distributed among the various groups as follows: 18, 32, 59, 75. This study includes, therefore, practically two-thirds of the cities in the first three groups (72 per cent, 60 per cent, and 71 per cent), and one-third (37.5 per cent) of the cities in the fourth group. Each group is sufficiently full to warrant valid conclusions respecting each group alone and its relations to the other groups.

The cities appear in the order of their population in 1910. Each city bears the same number throughout all the tables.

CLASSIFICATION OF TABLES.

The principal tables are grouped as follows:

1. The basal tables containing seven financial tables showing in detail the cost of each kind of expense for each city. (Tables 16 to 22.)
2. The percentage tables, containing six tables showing in detail for each city the percentage which each kind of expense is of the entire expense. (Tables 23 to 28.)
3. The average cost tables (two tables), showing in detail for each city the annual cost per pupil, based on enrollment, of each kind of expense for instruction, operation, and maintenance of elementary and secondary schools. (Tables 29 and 30.)
4. One table showing the per capita cost of school expenses based upon population, the comparative cost of school expenses and city expenses, and of school expenses and expenses for police. (Table 31.)
5. One table comparing the total costs of elementary and secondary schools in each city. (Table 32.)

The various items of school expenses are classified in these tables under the following heads:

1. Expenses of general control.
2. Expenses of instruction, operation, and maintenance of elementary schools.
3. Expenses of instruction, operation, and maintenance of secondary schools.
4. Expenses of instruction, operation, and maintenance of normal, evening, vocation, and special schools (totals only).
5. Combined expenses of instruction, operation, and maintenance of schools of all kinds.
6. Miscellaneous expenses.

One table is devoted to each of these heads in both the basal and percentage tables. Only heads 2 and 3 are represented in the average cost tables, because satisfactory units of measure were not available for the other items. The actual costs of kindergartens are segregated in a separate table. But because many cities do not separate the expenses of kindergartens and elementary schools, it is not possible to make a fair comparison of the expenses of all the cities for these classes of schools separately. They are therefore combined with the expenses of the elementary schools, and no computation is made of percentages and average costs of kindergartens.

The classification of items under each of these heads is not in accord with the classification of the new standard fiscal schedule of the Bureau of Education as adopted by the Department of Superintendence of the National Education Association. The tables were completed before the new schedule had been framed, but after the time when it was clear that the arrangement of the Census Office schedule would not longer prevail. It was thought best to place certain items under miscellaneous expenses rather than to incur the risk of finding them misplaced later under one of the more important heads. Of these items, school census and elections, and truant officers and police have been placed in the new schedule under "General control," insurance has been assigned to "maintenance of school plant," while medical inspection and nurses, and transportation of pupils have been placed, together with libraries, in a new division called "Auxiliary agencies."

No differentiation has been made between expenses of instruction, operation, and maintenance, for the reason that the definition of the items in accordance with which the basal statistics were collected made it impossible.

GENERAL METHOD OF TREATMENT.

It has come to be generally accepted that the way in which to give the clearest and at the same time the most accurate measure of a series of numbers is to state the median of the series and the limits of the middle 50 per cent. In time past the arithmetical mean or average has been used for this purpose, and it still has its value. Nevertheless its disadvantages, especially that of the undue weight exercised by a number which is very large or very small as compared with the others in the series, are causing the increased use of the median wherever practicable.

The determination of the median and of the middle 50 per cent requires first the arrangement of numbers or values in a series according to their amounts and then the numbering of the series, beginning with the lowest. The median is the amount above and below which one-half of the members of the series falls. In other words, it is the middle one (halfway between the two next the middle in case the number of things is even) of the things involved, distributed in the order of their amounts or values. Thus, if the number of cases or things were 17, the ninth case would be the median, because there would be 8 above and 8 below it. If the number of cases were 16 the median would be obtained by finding the halfway point between the value of case 8 and case 9.

The middle 50 per cent is found by various methods. The method followed in this study is one of the simplest. By the term as it is here used is meant the two limits between which are found those cases, amounting to one-half the total number, that are nearest the median, one-half the middle 50 per cent of the cases being below the median, the other half above it. For example, if the number of cases were 16, cases 5 to 12, inclusive, would compose the middle 50 per cent, and the amounts of these cases give the limits of the middle 50 per cent. When the number of cases is such that the upper and lower limits of the middle 50 per cent fall between two numbers, the halfway points between them are taken as the limits.[1]

The medians and the limits of the middle 50 per cent for each column are given by groups in the first lines of each table.

The second feature of the general method of treatment is the "ranking" of the various amounts in each column by groups. The "rank" of an item is its place in the series as arranged for the determination of the median and the middle 50 per cent, as just described, the item lowest in value being given rank 1, the next to the lowest rank 2, and so on. In other words, the "ranks" are the result of the process of the numbering of the series, which necessarily precedes the determination of the median and the middle 50 per cent. No element of comparative worth is attached to the numbers given. In some items, as in fuel, it is creditable to a city to have a low number; in others, a high number. The purpose for the insertion of the columns entitled "rank" in the tables is merely to facilitate the comparison of items.

BASAL TABLES.

The basal tables (16 to 22) contain the actual expenses, in dollars, for each city. The remaining groups of tables are based upon them, either in whole or in part, and serve to interpret more clearly the facts therein presented. All comparisons of actual costs must be made from this table.

The principal tables in this group are: 16, which gives the costs of general control subdivided according to the different functions which operate in this field; 17, which gives the expenses of instruction, operation, and maintenance of the elementary school subdivided into the different purposes for which the expenses were incurred; 18, which gives the same for the secondary school; 19, which gives the total expenses for instruction, operation, and maintenance of city training schools, of evening schools, of vacation schools, and of special schools, without reference to the particular purpose for which various expenses making up the totals were incurred; and 21, which gives the expenses for various miscellaneous activities and objects. Table 20 has been introduced in order to bring together in one table the totals of the amounts spent for each of the various objects in the operation and maintenance of all the types of schools included in

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[1] While this method of fixing the limits of the middle 50 per cent is not in strict accord with the most refined technical practice, it approximates the truth within fairly close limits. Those desiring to work out these limits more accurately will find the tables of frequencies for the most important items on pages 23–26.

17, 18, and 19. In 22 are segregated those items of expenses included in 17 which were incurred on account of kindergartens.

Speaking roughly, the $56,000,000 expended for all educational purposes by these cities were distributed as follows: General control, $2,000,000; elementary schools, $43,000,000; secondary schools, $8,000,000; training, evening, vacation, and special schools, $1,000,000; miscellaneous purposes, $1,000,000. Distributing the cost of the elementary, secondary, normal, evening, vacation, and special schools ($52,500,000 in all) among the various objects for which the expenses were incurred, we find that $40,000,000 were spent for teaching and supervision, $2,000,000 for textbooks and supplies, $4,000,000 for janitors, $3,000,000 for other expenses of operation, and $3,500,000 for repairs and replacements. The accompanying table shows the correct percentage of the total expenses for each educational activity and each kind of expense just mentioned.

TABLE 1.—*Per cent of total expenses for all cities combined.*

Tables.	Items.	Per cent.
16	General control	3.45
17	Elementary schools	76.20
18	Secondary schools	14.93
19	Normal, evening, vacation, and special schools	2.75
21	Miscellaneous expenses	2.67
	Total	100.00
16	Total expenses, general control	3.45
20	Salaries of teachers, all schools	68.92
20	Salaries and expenses of supervision, all schools	2.15
20	Textbooks, stationery, and general school supplies, all schools	3.43
20	Janitors, engineers, and firemen, all schools	6.92
20	Other expenses of operation, all schools	5.23
20	Apparatus and equipment, including repairs and replacements thereof, all schools	1.57
20	Repairs to buildings	5.66
21	Miscellaneous expenses	2.67
	Total	100.00

These percentages may be accepted as indicating present standards for all cities in the United States of 30,000 population and over. In other words, if all schools in this country were maintained by the Federal Government, Congress would have to appropriate money for their support in proportions approximating those given in this table. This does not mean that each group of cities or each city would or could conform to this scheme. The extent to which variation does occur, as well as the extent to which variation may occur without the necessity of any explanation in order to establish its reasonableness, will appear in the discussion of the next group of tables.

PERCENTAGES OF TOTAL SCHOOL EXPENSES.

The tables containing percentages (Tables 23–28) are practically the same in form as the basal tables (Tables 16–22). Every space in the basal tables has a corresponding space in the percentage tables in which is shown for each amount its per cent of the total school expenses of the city to which it relates. A column entitled "rank," the purpose of which, as well as the method of using it, is explained upon page 10, is placed by the side of each percentage column.

The median and the upper and lower limits of the middle 50 per cent (see p. 62) for each group are found together at the top of each table.

There are two fundamental questions in a comparative study of the school expenses of cities: First, are the expenses distributed as in other cities? Second, how do the unit costs for the various kinds of expenses compare? The tables in this group furnish the material for the consideration of the first question.

Caution regarding the use of the percentage tables.—Certain limitations upon the value of the conclusions based upon these percentage tables must not be overlooked. While they provide the most convenient method for comparing all kinds of expenses within a single city and the best means for comparing the distribution of expenses of different cities, they do not take into account the differences in the scale or standard of expense upon which cities conduct their systems. A city of low-expense standard and a city of high-expense standard are upon the same plane. Furthermore, while they do reveal every instance of disproportion or departure from mean percentages, it does not follow that such disproportions are improper, for in fact many of them can be justified. All that an instance of disproportion demands is that those in charge shall be able to make such justification. This can frequently be done by reference to the average-cost tables. For example, a high percentage of expenses for salaries of teachers in high schools may be justified partially or wholly if the average cost per pupil for that instruction does not vary far from the average.

Costs of operation likewise need to be interpreted by means of units for measuring such expenses. As these have not yet been generally adopted, such data as are available concerning the size, structure, age of buildings, and similar conditions must be taken into account in a rough manner in judging of the relative proportions spent for operation.

From all this follows the general principle that all percentage tables showing the distribution of expenses must be checked by reference to the average-cost tables and relative data.

Again, the percentage tables do not take into account the absence of any particular class of expenditure, as for special schools or vacation schools. As the total percentage for all kinds of expenses equals 100 in every instance, it follows that those cities which have a limited range of educational activity have a relatively larger percentage for the more common fields of expenditure. However, as the cities of each group vary comparatively little in the scope of their work and as the amounts expended for the newer activities is relatively small, it follows that for practical purposes little or no account need be taken of the differences caused by this fact.

The standard of comparison.—If all cities had exactly the same conditions surrounding the conduct of public schools and if all cities chose to meet these conditions in just the same way, the distribution of expenses would be practically the same in all. But as conditions are not the same and as school administration varies more or less, what limit should be set up for determining whether a city is in accord with or is an exception to the prevailing practice? The answer to this question is that the city which lies in the middle of the list of percentages arranged in order of amount may be taken as best representing the group, and that all expense accounts can be fairly called regular or proportionate if they fall in the middle 50 per cent of the list of percentages. Such is the standard used in this study. It may be found desirable, however, in applying this standard to some cities to include some percentages that are on the margin. This is due partially to the simplicity of the methods used in determining the middle 50 per cent.

METHOD OF USING THE PERCENTAGE TABLES.

Comparison of percentages of cities in the same group for one kind of expense.—The relative position of any city as compared with other cities of the same group, in regard to the percentage of total school expenses incurred for any particular purpose may be quickly determined from the percentage tables in the following manner: After noting the percentage for the item in question together with the rank for the same, reference should then be made to the median and the upper and lower limits of the middle 50 per cent, as given at the top of the table, and their respective ranks. The next step is to determine the relation of the rank of the city to the ranks of the median and of the limits of the middle 50 per cent for the group to which the city belongs. If the digit indicating the rank of the city is less than the digit for the median of the group of cities, the city has a less percentage than the group of cities taken as a whole; and if the digit is more the percentage is higher. If the digit is less than that of the lower limit of the middle 50 per cent or more than the upper limit the expenses may be considered as exceptionally low or exceptionally high.

Comparison of distribution of expenses in one city with distribution of expenses in other cities of the same group.—This may be done in a cursory manner by extending the process just indicated to all items and forming a rough judgment as to the items in which the city is low or high as compared with the group as a whole. The more accurate method consists in computing the differences between the percentages of the various classes of expenses for the city and the corresponding medians and arranging the excesses and deficiencies in separate lists. As those items that vary most from the medians are of greatest importance, and as variation from the median to the extent of the limits of the middle 50 per cent may be regarded as normal, the computation of differences in cases wherein the city's percentage is within the limits of the middle 50 per cent may be for all practical purposes neglected. The following table presents the result of such a computation for the city of Washington:

TABLE 2.—*Differences between the various percentages that lie outside the middle 50 per cents, and the median percentages for the same items, for Washington, D. C*

Rank	Number of cases.	Deficiencies.	Amount of deficiencies below median.	Rank.	Number of cases.	Excesses.	Amount of excess above median.
3	11	Superintendent's office	.23	9	11	Supervision of elementary schools.	1.62
2	13	Salaries of elementary school teachers.	7.41	10	13	Textbooks, stationery, and supplies of elementary schools.	.83
3	11	Repairs and replacements of equipment, elementary schools.	.30	13	13	Fuel, elementary schools	.75
3	12	Evening schools	1.04	12	12	Repairs to buildings, elementary schools.	3.69
1	9	Truant officers and police	.32	12	13	Salaries of secondary school teachers.	3.65
2	8	Payments to schools and institutions.	.47	8	8	Supervision of secondary schools.	.81
				10	10	Apparatus and manual training equipment, secondary schools.	.33
				11	12	Repairs to buildings, secondary schools.	.27
				11	12	Rent	.86

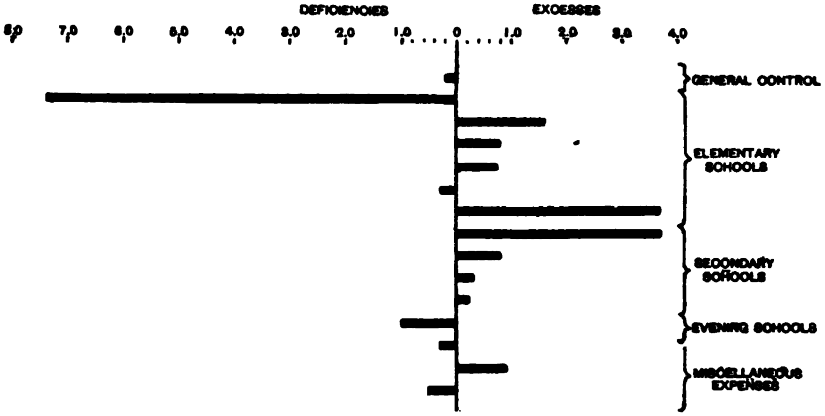

FIG. 1.—Differences between the various percentages of total expenses that lie outside the limits of the middle 50 per cent, and the median percentages for the same items, for Washington, D. C., based on Table 2.

Having arranged the facts in tabular form and illustrated them by a diagram similar to the above, the next step in a rational consideration of such facts is to determine in which cases such differences from the normal percentages are justifiable. For, as has been said, peculiar conditions in many cases may either justify large percentages or require the keeping of expenses within low amounts. In order that this process may be more clearly understood, a possible explanation of the variations in the case of Washington is here presented.

Let us start with the percentage in Table 2, that shows the largest deficiency—salaries of elementary school teachers. It has been said above that a high percentage for salaries of teachers would be justified if the average cost per pupil were near the normal. It is likewise true that a low percentage for salaries of teachers could not be considered as contrary to the best interests of the schools if the average costs for salaries were not below the normal. The average costs for elementary teachers in Washington is $21.24 or 88 cents above the median, as shown in Table 29. The deficiency in percentage may not, therefore, be considered as unreasonable or contrary to the best interests of the schools. Such contrast of a relatively low percentage on the one hand and of a relatively high average cost on the other presents an interesting situation. Unusually large amounts must have been spent for other purposes than salaries of elementary teachers in order to make so high an average cost appear so small in the percentage tables or else the number of pupils per teacher must have been unusually small. As the attendance statistics show the number of pupils per teacher to be only slightly below the normal, it follows that certain other expenses must be unusually high. The excess side of Table 2 seems to bear out this conclusion.

Let us now turn to those items in which excesses appear in order to see whether they may be justified. Table 51 shows that the average cost per pupil for salaries of teachers in secondary schools lies next to the median cost. Table 31 shows that the enrollment in secondary schools is larger than that of any city in the group except Chicago. It would seem, therefore, as though the large percentage for this purpose was entirely justified. A larger percentage for supervision of elementary and secondary schools is unavoidable in Washington because of the duplication of positions and salaries in the schools for white and colored pupils. The school buildings of Washington are for the most part small buildings—the eight-room building being the most frequent. This naturally increases the cost of operation and maintenance. It would seem, however, since repairs and fuel for elementary school buildings cost more proportionately than in any other city, and since repairs of secondary school buildings cost more than in any other city but one, that economy could be brought about in these particulars. The same may be said with regard to rent, for Baltimore, whose expenditures in this line are notorious, is the only city whose percentage exceeds Washington's. Coming back again to the deficiency side of the table, small appropriations for evening schools have led a number of teachers to give their services voluntarily, and small appropriations for truant officers have led to voluntary activities in this regard as well. The figures demonstrate the need of increased appropriations for these last two purposes in order that Washington may have an organization which approximates the standard of other cities.

Comparison of percentages of any one city with like percentages of all cities of 30,000 population and over included in this study.—This may be done in the same manner as indicated above for comparison with cities in the same group by using the medians and the limits of the middle 50 per cent for all cities as presented in the following table:

TABLE 3.—*Medians and limits of middle 50 per cents of percentages for entire list of 103 cities.*

	Medians.	Lower limit of middle 50 per cents.	Upper limit of middle 50 per cents.
TABLE 23.			
Column 1	0.875	0.480	1.510
2	.800	.250	1.400
3	1.870	1.315	2.590
4	.515	.200	.820
5	3.200	2.440	4.405
TABLE 24.			
Column 1	54.030	50.470	58.420
13	76.640	73.065	79.075
TABLE 25.			
Column 1	11.850	9.770	14.120
13	16.430	13.525	18.740
TABLE 27.			
Column 1	68.170	64.425	71.310
2	2.270	1.190	4.000
3	3.560	1.870	5.100
4	6.770	5.715	7.845
5	3.420	2.320	4.540
6	.420	.270	.630
7	.440	.250	.690
8	1.075	.690	2.080
9	.700	.350	1.250
10	.250	.080	.460
11	.790	.430	1.750
12	5.130	3.415	7.170
13	94.530	92.975	95.590
TABLE 28.			
Column 1	.190	.145	.340
2	.395	.250	.545
3	.320	.190	.400
4	.760	.410	.910
5	.310	.120	.550
6	.470	.225	.980
7	.160	.080	.290
8	.530	.270	1.300
9	.240	.100	.750
10	2.150	1.200	2.960

The accompanying tables of distribution of percentages for the most important items for the entire list of cities make possible a comparison which shows more definitely the relation of any city to every other city as regards one particular item of expense. For example, suppose we wish to ascertain the relative position of Baltimore as regards the per cent of total expenses devoted to salaries of elementary teachers. By referring to Table 24, column 1, we note that the per cent for this purpose is 58.5. Then, by consulting Table 4 below, we ascertain that this per cent lies in the eighth step; that there are 18 cities in all having per cents lying between 57.50 and 59.99; and that 66 cities have per cents lower than 57.50 and 17 cities have higher per cents than 59.99. These facts may be presented graphically in the same manner as a comparison of ratios of total expenses to population given in figure 8.

TABLE 4.—*Distribution of percentages of total school expenses expended for various purposes.*

A. FOR SUPERINTENDENT'S OFFICE. (See Table 23, column 3.)

Per cent of total school expenses.	Number of cities.	Per cent of total school expenses.	Number of cities.
Less than 0.50	2	2.50 to 2.99	13
0.50 to 0.99	14	3.00 to 3.49	9
1.00 to 1.49	15	3.50 to 3.99	4
1.50 to 1.99	25	4.00 to 4.50	3
2.00 to 2.49	17		

B. GENERAL CONTROL. (See Table 23, column 5.)

Less than 1.00	1	5.00 to 5.99	7
1.00 to 1.99	13	6.00 to 6.99	5
2.00 to 2.99	32	7.00 to 7.99	1
3.00 to 3.99	24	8.00 to 8.99	3
4.00 to 4.99	16	9.00 to 9.99	1

C. SALARIES OF ELEMENTARY TEACHERS. (See Table 24, column 1.)

Below 42.50	1	55.00 to 57.49	9
42.50 to 44.99	2	57.50 to 59.99	18
45.00 to 47.49	9	60.00 to 62.49	9
47.50 to 49.99	9	62.50 to 64.99	5
50.00 to 52.49	16	65.00 to 67.49	3
52.50 to 54.99	20	Above 67.50	2

D. TOTAL EXPENSES OF ELEMENTARY SCHOOLS. (See Table 24, column 13.)

Below 65.00	3	75.00 to 77.49	24
65.00 to 67.49	0	77.50 to 79.99	22
67.50 to 69.99	9	80.00 to 82.49	10
70.00 to 72.49	11	82.50 to 84.99	4
72.50 to 74.99	16	85.00 to 87.49	2

TABLE 4.—*Distribution of percentages of total school expenses expended for various purposes*—Continued.

E. SALARIES OF SECONDARY TEACHERS. (See Table 25, column 1.)

Per cent of total school expenses.	Number of cities.	Per cent of total school expenses.	Number of cities.
Below 6.00	2	12.00 to 13.99	20
6.00 to 7.99	7	14.00 to 15.99	17
8.00 to 9.99	18	16.00 to 17.99	9
10.00 to 11.99	26	18.00	3

F. TOTAL EXPENSES OF SECONDARY SCHOOLS. (See Table 25, column 13.)

7.50 to 9.99	8	17.50 to 19.99	21
10.00 to 12.49	14	20.00 to 22.49	8
12.50 to 14.99	22	22.50 to 24.99	7
15.00 to 17.49	21	25.00 to 27.50	2

G. SALARIES OF TEACHERS OF ALL SCHOOLS. (See Table 27, column 1.)

52.5 to 54.9	1	67.5 to 69.9	22
55.0 to 57.4	4	70.0 to 72.4	17
57.5 to 59.9	1	72.5 to 74.9	11
60.0 to 62.4	10	75.0 to 77.4	2
62.5 to 64.9	14	77.5 to 80.0	2
65.0 to 67.4	17	Above 80.0	2

H. SUPERVISION OF ALL SCHOOLS. (See Table 27, column 2.)

Less than 1.00	15	6.00 to 6.99	2
1.00 to 1.99	24	7.00 to 7.99	2
2.00 to 2.99	18	8.00 to 8.99	2
3.00 to 3.99	5	9.00 to 9.99	3
4.00 to 4.99	5	10.00 and over	5
5.00 to 5.99	4		

I. TEXT-BOOKS, STATIONERY, AND SCHOOL SUPPLIES OF ALL SCHOOLS. (See Table 27, column 3.)

Less than 1.00	9	5.00 to 5.99	14
1.00 to 1.99	17	6.00 to 6.99	8
2.00 to 2.99	17	7.00 to 7.99	5
3.00 to 3.99	17	8.00 to 8.99	1
4.00 to 4.99	12	9.00 to 9.99	1

J. FUEL FOR ALL SCHOOLS. (See Table 27, column 5.)

Less than 1.00	5	5.00 to 5.99	13
1.00 to 1.99	12	6.00 to 6.99	1
2.00 to 2.99	22	7.00 to 7.99	3
3.00 to 3.99	26	8.00 to 8.99	1
4.00 to 4.99	18		

K. INSTRUCTION, OPERATION, AND MAINTENANCE OF ALL SCHOOLS. (See Table 27, column 13.)

Below 84.00	1	92.00 to 93.99	28
84.00 to 85.99	2	94.00 to 95.99	46
86.00 to 87.99	1	96.00 to 97.99	14
88.00 to 89.99	3	98.00 to 100.00	1
90.00 to 91.99	7		

COMPARISON OF PERCENTAGES OF EXPENSES BETWEEN GROUPS OF CITIES.

It is not within the scope of this study to present elaborate comparisons between the various groups of cities respecting the differences in the percentages expended for various purposes, although the material for such comparison is furnished. It will doubtless prove of practical assistance, however, to administrators of public education to point out certain differences between the cities in this respect. For this purpose the medians alone may be taken, or the medians supplemented by the upper and lower limits of the middle 50 per cent.

The following conclusions relating to the differences in the distribution of the expenses in different sized cities seem to be established. The second group presents in many cases, however, an exception to the general rule.

(1) The larger the city the greater is the proportion of expenses incurred for—

(*a*) Salaries of elementary school teachers.

(*b*) Total cost of instruction, operation, and maintenance of elementary schools.

(*c*) Total cost of instruction, operation, and maintenance of all schools.

(2) The smaller the city the greater is the proportion of expenses incurred for—

(*a*) Superintendent's office.

(*b*) Total expense of general control.

(*c*) Supervisors of elementary schools.

(*d*) Salaries of teachers in secondary schools.

(*e*) Total cost of instruction, operation, and maintenance of secondary schools.

(*f*) Janitors, engineers, and firemen for elementary, secondary, and all schools.

(*g*) Fuel for elementary, secondary, and all schools.

(*h*) Repairs for elementary schools and all schools.

THE AVERAGE COSTS PER PUPIL FOR CERTAIN PRINCIPAL ITEMS OF EXPENSE.

This group contains two tables, 29 and 30. They correspond to the basal and percentage tables that deal with the expenses of elementary and secondary schools (Tables 17 and 18, 24 and 25). The tables are identical in form with the corresponding percentage tables. The average costs are based on enrollment.[1] While this is not the best

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[1] The enrollment figures may be found in Table 32; also the closing date of the fiscal year for each city.

measuring costs of school systems, it is the best that was avail-
It is not likely, however, that the relative costs are materially
ent from what they would be if a different attendance unit
been used. Average daily attendance has come to be generally recognized as the best unit, although it has its limitations. While the percentage tables emphasize the expenses of a school system as a whole and the proportion of the total devoted to the costs of the various objects of expenditures, the average cost tables emphasize the individual items of expense and the economical expenditure of the same. In the former each item exists as a part of a whole and the total of the percentages for each city equals 100 per cent. In the latter, each kind of expense is measured by itself.

Cities whose fiscal years ended before December, 1909, are not included in these tables for the reason that it did not seem proper in computing the average costs to divide the expenses for the year ended previous to December 1 by the enrollment for the school year 1908–9. Neither did it seem permissible to compare average cost of certain cities for 1908, which might have been obtained for the cities in question by using the enrollment figures for 1907–8 with the average cost of the cities for 1908–9. It therefore seemed necessary to omit these cities altogether.

Caution regarding the use of average cost tables.—One danger in using average costs deserves attention. If a city has a low average cost for any particular purpose as compared with other cities, the natural tendency is to say at once without reference to other items of expense that the amount expended for that purpose should be increased up to the normal amount for cities of that same class. Take the average amount per pupil expended for salaries of teachers in the elementary schools of Baltimore—$13.75. The table shows that this is the lowest average cost for this purpose of all cities in the group. Those who are interested in this one item might very likely go no further in their study of school expenses, but would conclude at once that a clear case had been made out in favor of increasing the amount paid teachers in elementary schools as much as $6.41 per pupil, in which circumstance the amount expended would be the median or average cost for the group.

But those who have the administration of schools in charge must look to all items of expense and must maintain a proper balance between them. The percentage tables furnish the data for ascertaining this balance and all consideration of the increase in the average cost of any item of expense must be considered in the light of its effect upon the correct balance between all items of expense as determined by an analysis of the percentage tables in accordance with the method suggested in the previous section. Continuing with the example referred to in the paragraph above, the percentage tables tell us that the proportion of school moneys paid to the elementary teachers of Baltimore is much larger than the median amount for cities of the same group, and that 8 of the 13 cities devote a less percentage to this purpose.

This does not mean that the salaries should not be raised, for they should. The salary schedule for the elementary schools in Baltimore is among the lowest of all the largest cities in the country. But it does mean that there are other features of the operation and maintenance of the schools of Baltimore which must not be overlooked.

The items that should receive the greatest attention in such a balancing between expenditures are those which are lowest or highest comparatively in relation to the percentages of other cities. Baltimore percentages for supervision and for wages of janitors are the lowest for all the cities. Admitting that the salaries of elementary teachers are too low, is it in this item that the increased expenditures are needed most in order to bring about the maintenance of the best school system, and in order to recompense all who are serving it in a manner which most nearly approaches equitable amounts? As determined by the standard set by cities of the same class the answer is "No." Baltimore needs to spend more money for supervision before spending more money for teachers in order to have the best balanced system, and should in equity pay more to her janitors before increasing the salaries of her teachers. But the need for increasing the salaries of teachers from the absolute point of view is certainly clear; the figures merely prove that the items of supervision and wages of janitors need it more. The final conclusion of the whole matter is that Baltimore in order to put her school system on a plane of efficiency as high as other cities must increase her income for schools up to the point where normal expenditures may be made for all these purposes.

The conclusion of all this discussion is that action should never be based on a comparison of average costs alone, and that the percentage tables furnish a proper corrective. The ideal is to keep total average costs and percentages of total expenses as near the median as possible, and within the limit of the middle 50 per cent, making due allowance for local conditions which may rightfully cause extreme variations.

Average cost per pupil for school purposes also has very direct relations with the average cost per population (ratio of school expense to population) and the ratio of school expenses to expenses of the city as a whole.

METHOD OF USING THE AVERAGE-COST TABLES.

These average-cost tables may be used in the same way as the percentage tables. Data relating to average cost may be gathered and illustrated according to the methods presented in the discussion of the percentage item. The average cost in one city for any one kind of expenses may be compared with the average costs of other cities in the same group by noting its relation to the median and the middle 50 per cent. (See p. 62.) A logical outcome of such a comparison is the estimation of the amount of increased resources that would be required to bring an expense in any city up to the median, or vice versa, of the amount that would have to be deducted in order to bring the expense down to the median. This may be done by obtaining the difference between the median average cost of the city and multiplying it by the number of pupils enrolled. (See Table 32.) As an example, let us continue the discussion of the average cost of salaries of elementary teachers in Baltimore. The average cost per pupil for this purpose was $13.95, while the median average cost for the group was $20.36. The difference, $6.41, multiplied by the enrollment—76,500, approximately—gives close to $500,000 as the additional amount required to bring Baltimore's expenses up to the median of the cities of Group I.

Comparison of all average costs may be carried out by the method shown on p. 17 for percentages of total expenses. The accompanying table, which brings together all the facts relating to average costs of the elementary schools of Baltimore, is given as an illustration of a variation of the method suggested in connection with percentages. The computations given have been performed roughly in order that the method might be the more clearly apprehended.

Table 5 gives a comparison of average costs of different kinds of expenses of elementary schools in Baltimore with median expenses of Group I, together with computation of amounts necessary to bring Baltimore's expenses up to the standard of other cities. The enrollment is figured as 76,500 in every item.[1]

TABLE 5.—*Comparison of school expenses of Baltimore with those of other cities.*

Items.	Median average costs, all cities in Group I.	Baltimore's average costs.	Differences.	Increased expense required.
Total expenses	$26.54	$18.71	$7.83	$600,000
Salaries, teachers'	20.36	13.95	6.41	500,000
Supervision	.365	.04	.325	25,000
Janitors', engineers', etc., salaries	1.73	1.32	.41	34,000
Janitors' supplies and sundry expenses of maintenance and operation	.37	Trace.	.37	28,000
Libraries	.05	.00	.05	4,000
Apparatus and manual training equipment	.09	.03	.06	4,500
Repairs and replacement of equipment	.20	.14	.06	4,500

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[1] This table was prepared by the author for the *Commission appointed to study the system of education in the public schools of Baltimore* and appeared in report upon p. 42.

Comparison of any average cost of any city with the average costs of all cities by use of the tables of frequencies and accompanying diagram may be made in the same way as in the case of percentages. (See p. 17.) Tables of frequencies for the most important average costs follow.

TABLE 6.—*Distribution of average costs, per pupil enrolled, of various expenses involved in the instruction, operation, and maintenance of elementary schools. (See Table 29.)*

A. SALARIES OF TEACHERS.

Average costs.	Cities of—				
	Group I.	Group II.	Group III.	Group IV.	All cities.
$8–$8.99				1	1
$9–$9.99					
$10–$10.99		1	1	2	4
$11–$11.99			1		1
$12–$12.99		1	2	3	6
$13–$13.99	1		4	2	7
$14–$14.99	1	1	5	3	10
$15–$15.99		1	2	1	4
$16–$16.99		2	4	1	7
$17–$17.99		2	1	2	5
$18–$18.99	1	3	1	1	6
$19–$19.99		2	2	1	5
$20–$20.99	4	1	1		6
$21–$21.99	2		2		4
$22–$22.99			1		1
$23–$23.99					
$24–$24.99		1			1
$25–$25.99					
$26–$27	1				1

B. SUPERVISION.

Below $0.20	2	3	2	1	8
$0.20–$0.39	2	3	7	7	19
$0.40–$0.59	2	1	2	1	6
$0.60–$0.79		1	3	2	6
$0.80–$0.99					
$1–$1.19	1		2	1	4
$1.20–$1.39					
$1.40–$1.59		1		1	2
$1.60–$1.79					
$1.80–$1.99	1			1	2
$2–$2.19			1		1
$2.20–$2.39			1		1
$2.40–$2.59			1		1
$2.60–$2.79		1			1
$2.80–$2.99					
$3–$3.20			1		1

C. TEXTBOOKS, STATIONERY, AND GENERAL SUPPLIES.

Below $0.20	1	2	1	3	7
$0.20–$0.39	1	1	1	1	4
$0.40–$0.59	1	3	5	3	12
$0.60–$0.79		4	3	1	8
$0.80–$0.99	4	2	2	2	10
$1–$1.19	1		7	2	10
$1.20–$1.39		1	1	2	4
$1.40–$1.59	1		2	2	5
$1.60–$1.79		1	2	1	4
$1.80–$1.99	1	1	1		3
$2–$2.20			1		1

D. SALARIES OF JANITORS, ENGINEERS, AND FIREMEN.

$0.40–$0.59			1		1
$0.60–$0.79					
$0.80–$0.99		2	2	3	7
$1–$1.19			4	1	5
$1.20–$1.39	3	2	2	1	8
$1.40–$1.59	1	2	5	1	9
$1.60–$1.79	2	2	4	2	10
$1.80–$1.99	1	1	4	3	9
$2–$2.19		3	2	6	11
$2.20–$2.39	1	1	2		4
$2.40–$2.59	1				1
$2.60–$2.79			1		1
$2.80–$2.99					
$3–$3.19		2			2
$3.20–$3.40	1				1

TABLE 6.—*Distribution of average costs, per pupil enrolled, of various expenses involved in the instruction, operation, and maintenance of elementary schools*—Continued.

E. FUEL.

Average costs.	Cities of—				
	Group I.	Group II.	Group III.	Group IV.	All cities.
Below $0.20	....	....	....	1	1
$0.20–$0.39	2	4	3	1	10
$0.40–$0.59	1	2	4	3	10
$0.60–$0.79	4	1	6	2	13
$0.80–$0.99	2	1	8	3	14
$1–$1.19	....	2	3	1	6
$1.20–$1.39	1	3	....	2	6
$1.40–$1.59	....	2	1	2	5
$1.60–$1.80	....	....	2	1	3

F. REPAIRS OF BUILDINGS.

$0.20–$0.39	....	....	1	2	3
$0.40–$0.59	....	2	2	2	6
$0.60–$0.79	1	1	5	1	8
$0.80–$0.99	1	1	2	....	4
$1–$1.19	1	2	3	....	6
$1.20–$1.39	1	2	3	2	8
$1.40–$1.59	2	....	1	3	6
$1.60–$1.79	1	....	1	3	5
$1.80–$1.99	....	4	1	1	6
$2–$2.19	....	....	1	1	2
$2.20–$2.39	....	....	1	....	1
$2.40–$2.59	1	....	1	....	2
$2.60–$2.79	....	....	1	....	1
$2.80–$2.99	....	....	....	....	....
$3–$3.19	....	3	1	....	4
$3.20–$3.39	....	....	....	....	....
$3.40–$3.60	1	....	....	....	1

G. TOTAL EXPENSE OF INSTRUCTION, OPERATION, AND MAINTENANCE OF ELEMENTARY SCHOOLS.

$11–$11.99	....	....	....	1	1
$12–$12.99	....	....	....	....	....
$13–$13.99	....	1	1	....	2
$14–$14.99	....	....	....	1	1
$15–$15.99	....	1	1	....	2
$16–$16.99	....	....	1	2	3
$17–$17.99	....	....	....	....	....
$18–$18.99	1	1	3	3	8
$19–$19.99	....	....	2	1	3
$20–$20.99	....	....	2	....	2
$21–$21.99	....	1	5	1	7
$22–$22.99	1	1	4	3	9
$23–$23.99	1	3	....	1	5
$24–$24.99	....	1	....	1	2
$25–$25.99	1	2	2	2	7
$26–$26.99	2	1	3	1	7
$27–$27.99	1	....	....	....	1
$28–$28.99	1	1	....	....	2
$29–$29.99	....	1	2	....	3
$30–$30.99	....	....	1	....	1
$31–$31.99	1	1	....	....	2
$32–$32.99	....	....	....	....	....
$33–$34	1	....	....	....	1

Table 7.—*Distribution of average costs, per pupil enrolled, of various expenses involved in the instruction, operation, and maintenance of secondary schools.* (*See Table 30.*)

A. SALARIES OF TEACHERS.

Average costs.	Cities of—				
	Group I.	Group II.	Group III.	Group IV.	All cities.
$20–$22.49		1	2	2	5
$22.50–$24.99		2	1	2	5
$25–$27.49				1	1
$27.50–$29.99			2	5	7
$30–$32.49	1	1		2	4
$32.50–$34.99		2	6	2	10
$35–$37.49	1	3	5		9
$37.50–$39.99		1	5		6
$40–$42.49		1		1	2
$42.50–$44.99	1	1	1		3
$45–$47.49		2	3		5
$47.50–$49.99	2				2
$50–$52.49				1	1
$52.50–$54.99	2			1	3
$55–$57.49	1				1
$57.50–$59.99					
$60–$62.49		1			1
$62.50–$64.99	1				1
$65–$67.49	1		1		2
$67.50–$70.00			1		1

B. TEXTBOOKS, STATIONERY, AND GENERAL SCHOOL SUPPLIES.

$0.49	1	5	1	3	10
$0.50–$0.99	1		3	2	6
$1–$1.49	1		2		3
$1.50–$1.99		1	2	3	6
$2–$2.49	1	2	1	3	7
$2.50–$2.99	2	2	2	1	7
$3–$3.49	1	1			2
$3.50–$3.99	1	1	4	2	8
$4–$4.49		1	3		4
$4.50–$4.99			1		1
$5–$5.49		1	1		2
$5.50–$5.99	1		1	2	4
$6 and over	1		3		4

C. SALARIES OF JANITORS, ENGINEERS, AND FIREMEN.

$1–$1.24		1	2		3
$1.25–$1.49		1		3	4
$1.50–$1.74			2	1	3
$1.75–$1.99		2	2	1	5
$2–$2.24			2	3	5
$2.25–$2.49	1	2	2	1	6
$2.50–$2.74	2	1	2	1	6
$2.75–$2.99	2	1	4		7
$3–$3.24		2	2	2	6
$3.25–$3.49			1		1
$3.50–$3.74		1	1		2
$3.75–$3.99	1	1	1		3
$4–$4.24	1	1	2	2	6
$4.25–$4.49			1	2	3
$4.50–$4.74					
$4.75–$4.99	1				1
$5–$5.24			1		1
$5.25–$5.49	1	1			2
$5.50–$5.74		1			1
$5.75–$5.99					
$6 and over	1		2	1	4

TABLE 7.—*Distribution of average costs, per pupil enrolled, of various expenses involved in the instruction, operation, and maintenance of secondary schools*—Continued.

D. FUEL.

Average costs.	Cities of— Group I.	Group II.	Group III.	Group IV.	All cities.
Below $0.20		1			1
$0.20-$0.39	1	1	1		3
$0.40-$0.59		1	3	2	6
$0.60-$0.79	1	1	2		4
$0.80-$0.99	2	1	2	1	6
$1-$1.19	1	2	2	2	7
$1.20-$1.39		2	6	1	9
$1.40-$1.59	2	1	3	2	8
$1.60-$1.79	2		2	2	6
$1.80-$1.99		1	3	1	5
$2-$2.19		1	1	1	3
$2.20-$2.39	1	1	1	1	4
$2.40-$2.59			1	1	2
$2.60-$2.79					
$2.80-$2.99					
$3 and over		1		2	3

E. REPAIRS TO BUILDINGS.

Average costs.	Group I.	Group II.	Group III.	Group IV.	All cities.
$0.25-$0.49			2	1	3
$0.50-$0.74		1	3	1	5
$0.75-$0.99		1	1	1	3
$1-$1.24	1	1	2	3	7
$1.25-$1.49		1	4		5
$1.50-$1.74		2		2	4
$1.75-$1.99		2			2
$2-$2.24	1	1	3	1	6
$2.25-$2.49	1	1	1	2	5
$2.50-$2.74	1	2	1	1	5
$2.75-$2.99	1				1
$3-$3.24	1				1
$3.25-$3.49	1				1
$3.50-$3.74	1		1		2
$3.75-$3.99					
$4-$4.24			1		1
$4.25-$4.49					
$4.50-$4.74	1				1
$4.75-$4.99		1	1		2
$5 and over			3	1	4

F. TOTAL EXPENSE OF INSTRUCTION, OPERATION, AND MAINTENANCE.

Average costs.	Group I.	Group II.	Group III.	Group IV.	All cities.
$25-$29.99		2	2	3	7
$30-$34.99		1			1
$35-$39.99		1	1	6	8
$40-$44.99		2	7	3	12
$45-$49.99	2	2	5	2	11
$50-$54.99		3	4		7
$55-$59.99	2	1	2	1	6
$60-$64.99	2	1	2		5
$65-$69.99	1	1	1	2	5
$70-$79.99	1	1			2
$80-$89.99	2		1		3
$90-$100			2		2

The following conclusions are based on comparisons of the average costs of the same kinds of expenses in the different groups of cities:

1. The larger the city the greater the average cost per pupil enrolled of—
   - (*a*) Total cost of instruction, operation, and maintenance of elementary schools.
   - (*b*) Salaries of elementary-school teachers.
   - (*c*) Janitors of elementary schools.
   - (*d*) Repairs of elementary schools.
   - (*e*) Total cost of instruction, operation, and maintenance of secondary schools.
   - (*f*) Salaries of secondary-school teachers.
   - (*g*) Janitors of secondary schools.
   - (*h*) Repairs of secondary schools.
2. There is no apparent tendency in the variation of the average cost of—
   - (*a*) Textbooks, stationery, and general school supplies of elementary schools.
   - (*b*) Fuel of elementary and secondary schools.

TOTAL SCHOOL EXPENSES AS COMPARED WITH POPULATION, TOTAL CITY EXPENSES, AND EXPENSES OF POLICE DEPARTMENT.

Table 31 gives a comparison of the total expenses of schools (1) with the population, (2) with the total city expenses, (3) with the expenses of the police department.

The total city expenses and the expenses of the police department have been obtained from Table 4 of Special Reports of the Bureau of the Census: Statistics of cities, 1908 (pp. 116–163). The population figures were obtained from the same source (pp. 343–345). The expenses of schools are the same as in the first column of Table 16.

Comparison of cities of the same group.—Each of the three items expressing comparative values—expenses of schools per capita of population,[1] ratio of total school expenses to city expenses, and ratio of total school expenses to expenses of the police department—may be used in the same way in making comparisons. A rough comparison may be made by noting their respective ranks and the relation of the rank of each to the ranks of the median and of the limits of the middle 50 per cent. This comparison may be made more accurately and more impressively by the preparation of diagrams. Baltimore is again taken as the city with which to illustrate this method of comparison.

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[1] Largely for the sake of convenience the cost per capita, expressed as an abstract number, is hereafter referred to also as the ratio of school expenses to population.

The revised estimates of population in June, 1908, as made by the Census Office, have been used in making this computation. This estimate for Baltimore is 549,017.

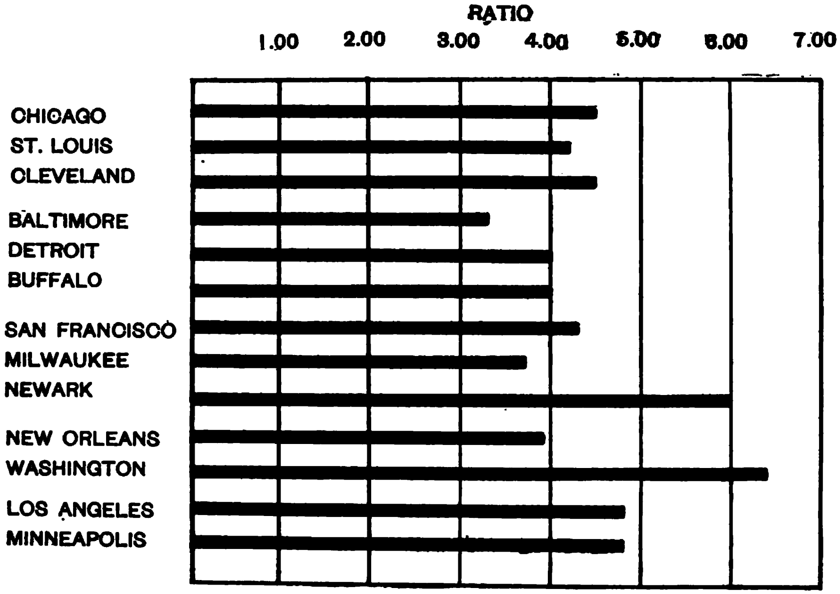

FIG. 2.—Ratio of school expenses to population in cities of Group I.

These ratios may also be read as cost per capita of population. For example, the cost per capita of population of all school expenses in Detroit was $4.[1] A comparison of the relative amounts of school expenses and of total city expenses in these 13 cities shows that Detroit expended for school purposes a larger percentage of the total city expenses than 8 cities and a smaller percentage than 4. The median or average percentage was 25.9; Detroit's percentage was 28. In other words, in the average, or normal city, 25.9 cents out of every dollar expended for all municipal purposes went for schools, while in Detroit 28 cents were so expended. The following diagram presents these facts:

These ratios may also be read as the number of cents in each dollar of city expenses that was expended for schools. For example, San Francisco expended 20 cents out of every dollar of city expenses upon its schools.[1] A comparison of expenses for schools and for police in these 13 cities shows that 1 city spent a smaller relative amount for schools than St. Louis, while 11 cities were relatively more liberal. For every dollar spent for police, St. Louis spent only $1.41 for schools, while the median or average city spent $2.12. The following diagram presents the facts:

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[1] Figures 2, 3, and 4 were prepared for the report of the *Commission appointed to study the system of education in the public schools of Baltimore*, pp. 34–36.

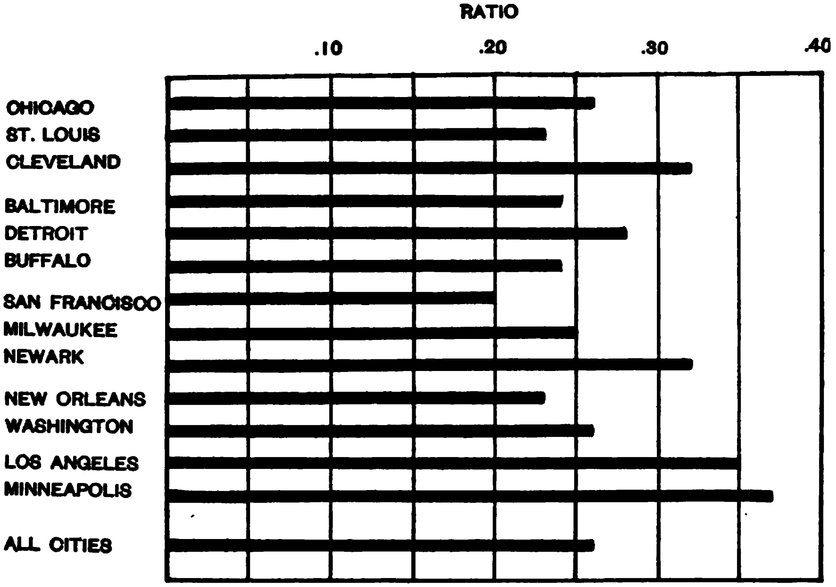

FIG. 3.—Ratio of school expenses to total city expenses in cities of Group I.

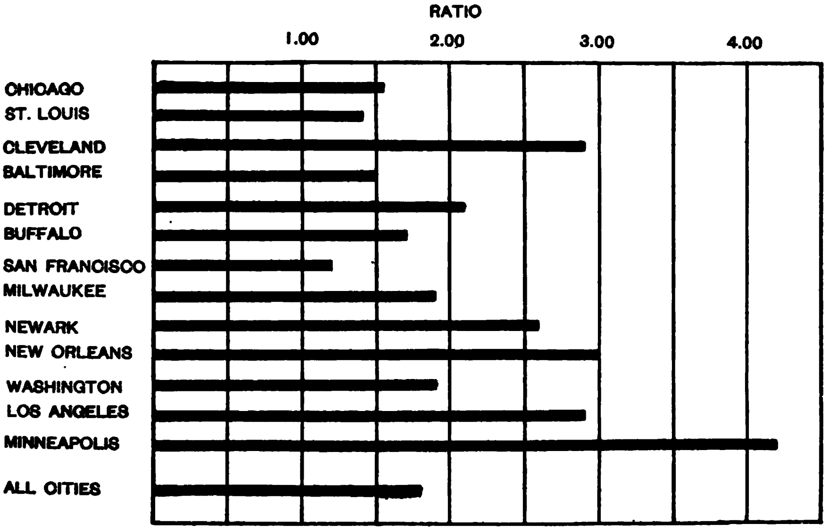

FIG. 4.—Ratio of school expenses to expenses for police in cities of Group I.

These ratios may be read as number of dollars spent for schools for each dollar that was spent for police. For example, Baltimore expended one dollar and fifty cents upon its schools for every dollar spent for police.[1]

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[1] Figures 2, 3, and 4 were prepared for the report of the *Commission appointed to study the system of education in the public schools of Baltimore*, pp. 34–36.

In order that a comparison of any city with those of the same group or with all may be facilitated the following tables of frequencies have been prepared:

TABLE 8.—*Distribution of ratios of total school expenses to population.* (*See Table 31.*)

Ratio.	Number of cities.				
	Group I.	Group II.	Group III.	Group IV.	Total.
1.50 to 1.99			3		3
2.00 to 2.49			2	2	4
2.50 to 2.99	1	3	3	5	12
3.00 to 3.49	1		10	4	15
3.50 to 3.99	2	4	8	6	20
4.00 to 4.49	3	7	6	6	22
4.50 to 4.99	4	3	5	2	14
5.00 to 5.49		2	1	3	6
5.50 to 5.99		1	2		3
6.00 to 6.49	2		2		4

TABLE 9.—*Distribution of ratios of school expenses to total city expenses.* (*See Table 31.*)

Ratio.	Number of cities.				
	Group I.	Group II.	Group III.	Group IV.	Total.
.15 to .199			3	1	4
.20 to .249	5	2	2	2	11
.25 to .299	4	2	3	1	10
.30 to .349	2	8	11	7	28
.35 to .399	2	4	6	7	19
.40 to .449		3	10	4	17
.50 to .549		1	7	3	11
.55 to .599				3	3

TABLE 10.—*Distribution of ratios of school expenses to expenses for police.* (*See Table 31.*)

Ratio.	Number of cities.				
	Group I.	Group II.	Group III.	Group IV.	Total.
1.00 to 1.49	3		4	1	8
1.50 to 1.99	3	3		2	8
2.00 to 2.49	2	3	6	2	13
2.50 to 2.99	3	4	6	1	14
3.00 to 3.49	1	5	6	4	16
3.50 to 3.99		1	6	2	9
4.00 to 4.49	1	1	4	3	9
4.50 to 4.99		1	4	3	8
5.00 to 5.49			2	3	5
5.50 to 5.99			1	1	2
6.00 to 6.49		1	1	4	6
6.50 to 6.99					
7.00 to 7.49		1	2		3
7.50 to 7.99				1	1
8.00 to 8.49				1	1

The following diagrams represent graphically the facts in the above tables relating to (1) ratio of school expenses to population in all cities; (2) ratio of school expenses to total city expenses in all cities; (3) ratio of school expenses to expenses for police in all cities. The lines are drawn to represent the middle point in each step of the list of ratios. Thus, in the first table mentioned the first line is drawn to represent $1.75 as the middle point between $1.50 and $1.99.

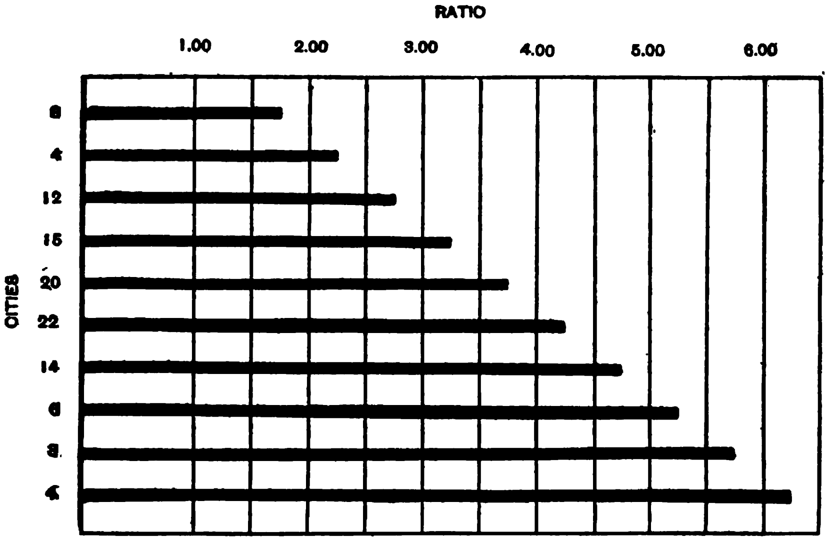

FIG. 5.—Frequencies of various ratios of school expenses to population in all cities. These ratios may be read as cost per capita of population.

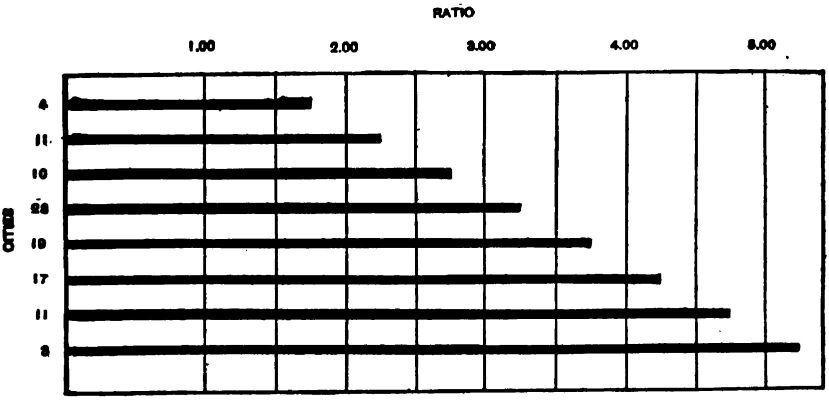

FIG. 6.—Frequencies of various ratios of school expenses to total city expenses in all cities. These ratios may be read as the number of cents in each dollar of city expenses there was expended for schools.

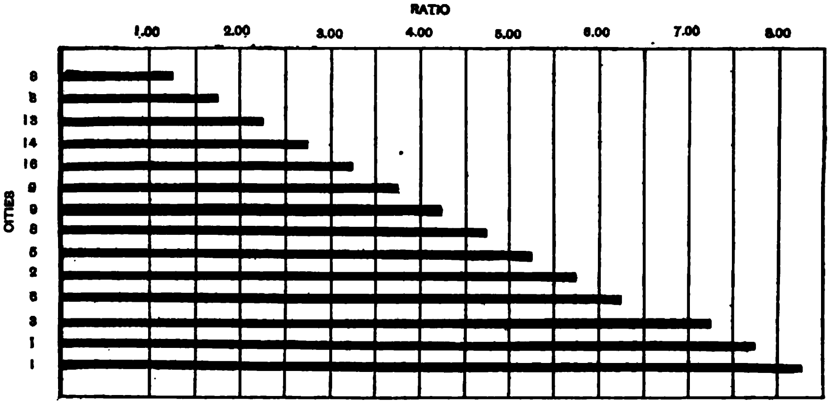

Fig. 7.—Frequencies of various ratios of school expenses to expenses for police in all cities. These ratios may be read as the number of dollars spent for schools for each dollar spent for police.

By the use of Figure 8 the place of any city in such diagrams as are given above can be readily found. As the lines represent the middle amounts in each step of the distribution in the table of frequencies, it is well to give the exact amount for the city in question.

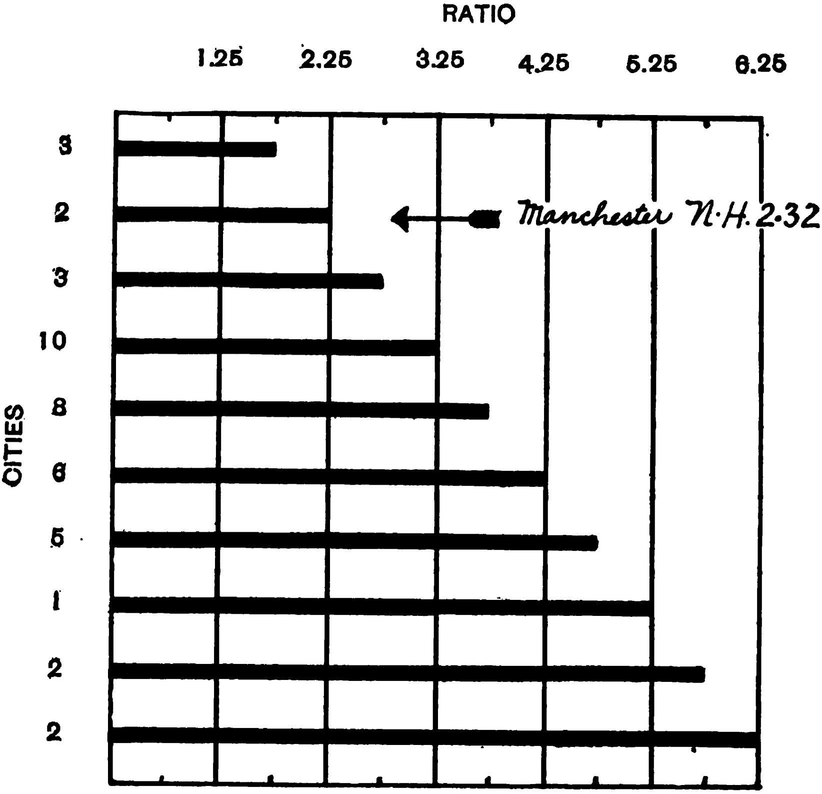

Fig. 8.—Ratio of total school expenses to population of cities in Group III and relation of ratio of Manchester, N. H., to those of all other ratios.

A comparison of the three ratios for each of the various cities reveals a tendency of cities to maintain the same relationship to other cities in all three respects.

The two tables given below (Tables 11 and 12) bring together certain facts relating to the cities at the lower and upper ends of the distribution of the three ratios in Table 31. The first table assembles the facts relating to the ranks and the second is based upon it, giving instead of the ranks the location of each city as regards the quartiles in the distribution.

TABLE 11.—*Showing for those cities which are included in the lowest and highest quartiles of the distribution of ratios of school expenses to population (cost per capita) in each group, the rank of the same cities as regards ratio of school expenses to total city expenses, and ratio of school expenses to expenses for police. (See Table 31.)*

Cities in lowest quartile.	Rank.			Cities in highest quartile.	Rank.		
	Ratio of school expenses to population.	Ratio of school expenses to total city expenses.	Ratio of school expenses to expenses for police.		Ratio of school expenses to population.	Ratio of school expenses to total city expenses.	Ratio of school expenses to expenses for police.
Group I—13 cities.				*Group I—13 cities.*			
New Orleans, La	1	2	12	Washington, D. C	13	8	6
Baltimore, Md	2	5	3	Newark, N. J	12	10	9
Milwaukee, Wis	3	6	8	Minneapolis, Minn	11	13	13
Group II—20 cities.				*Group II—20 cities.*			
Memphis, Tenn	1	1	2	Spokane, Wash	20	19	20
Nashville, Tenn	2	5	7	Oakland, Cal	19	10	14
Birmingham, Ala	3	2	4	Grand Rapids, Mich	18	18	18
St. Paul, Minn	4	7	8	Cambridge, Mass	17	9	11
Albany, N. Y	5	3	4	Omaha, Nebr	16	13	17
Group III—42 cities.				*Group III—42 cities.*			
Jacksonville, Fla	1	3	2	Springfield, Mass	40	20	30
Charleston, S. C	2	1	3	Des Moines, Iowa	39	38	39
Savannah, Ga	3	5	1	Bayonne, N. J	38	37	26
Norfolk, Va	4	2	4	Hartford, Conn	37	15	20
Manchester, N. H	5	4	14	Tacoma, Wash	36	22	34
Covington, Ky	6	16	10	Saginaw, Mich	35	35	37
Wilmington, Del	7	14	6	Brocton, Mass	34	19	25
Dallas, Tex	8	11	18	Camden, N. J	33	29	15
Reading, Pa	9	24	31	Holyoke, Mass	32	13	23
Elizabeth, N. J	10	18	7	Portland, Me	31	6	16
Wichita, Kans	11	28	33				
Group IV—28 cities.				*Group IV—28 cities.*			
Chattanooga, Tenn	1	2	1	Davenport, Iowa	27	24	15
Knoxville, Tenn	2	1	4	Malden, Mass	27	17	17
Newport, Ky	3	13	5	Sacramento, Cal	26	19	10
Woonsocket, R. I	4	4	6	Topeka, Kans	25	27	28
Dubuque, Iowa	5	8	10	Pueblo, Colo	24	5	12
Little Rock, Ark	6	16	3	Sioux City, Iowa	23	24	20
Lancaster, Pa	7	20	16	Haverhill, Mass	22	7	15

TABLE 12.—*Showing for those cities which lie in the lowest and highest quartiles in the distribution of ratio of school expenses to population (cost per capita) in each group, the number of cases in which their ratios of school expenses to city expenses and of school expenses to expenses of police fall in each of the four quartiles of those distributions.* (*See Table 31.*)

I. CITIES WHOSE COSTS PER CAPITA LIE IN THE LOWEST OR FIRST QUARTILE OF RATIO OF SCHOOL EXPENSES TO POPULATION.

Cities of—	Number of cities.	Ratio of school expenses to total city expenses.				Ratio of school expenses to police expenses.			
		First quarter.	Second quarter.	Third quarter.	Fourth quarter.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.
Group I	3	1	2	....	....	1	....	2	....
Group II	5	4	1	....	....	3	2	....	....
Group III	11	6	3	2	....	7	2	2	....
Group IV	7	3	2	2	....	5	1	1	....
Total	26	14	8	4	....	16	5	5	....

II. CITIES WHOSE COSTS PER CAPITA LIE IN THE HIGHEST OR FOURTH QUARTILE OF RATIO OF SCHOOL EXPENSES TO POPULATION.

Cities of—	Number of cities.	Ratio of school expenses to total city expenses.				Ratio of school expenses to police expenses.			
		First quarter.	Second quarter.	Third quarter.	Fourth quarter.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.
Group I	3	....	1	1	1	....	1	1	1
Group II	5	....	....	2	3	....	....	2	3
Group III	10	1	4	2	3	....	3	4	3
Group IV	7	2	....	2	3	....	2	4	1
Total	25	3	5	7	10	....	6	11	8

These tables indicate that cities which give low amounts per capita to schools do not generally reduce correspondingly the costs of their municipal governments in general and of their police departments so that the ratio of school expenses to these expenses will be maintained near the median, and that cities which pay large amounts per capita for schools do not as a rule maintain their city governments at such a high rate of expense as to bring the ratio of school expenses to total city expenses and of school expenses to police down near the median. In other words, expenses for schools and other city expenses are largely dissociated. Those considerations which prompt a cutting down in school expenses do not produce reductions in city expenses, and increases in school expenses do not cause augmentation in amounts spent for other purposes.

This may be due in part to the separation in many cities of the organs of local government for education and for other civil purposes. While the problem can not be entered upon in this study there seems to be a tendency in favor of cities with departments of education making low appropriations for school purposes without paring down other expenses; while those cities in which the schools are under the control of independent districts spend relatively large amounts for educational purposes. The wisdom or unwisdom of either form of administration can not be discussed here. It may be said in passing, however, that one of the most important considerations in this particular matter is the efficiency of the schools in the various cities under the two forms of organization.

Comparison of percentages by groups.—The following conclusions are apparent from an inspection of the median and the limits of the middle 50 per cent of each group:

1. The larger the city the greater is the expense per capita of population for maintaining schools.
2. The larger the city the smaller is the ratio of school expenses to total city expenses.
3. The larger the city the smaller is the ratio of school expenses to expenses for the police department.

From the above it may be drawn that, while expenses for schools per capita of population increase with the size of the cities, they do not as a rule increase so much as other city expenses.

TABLE 13.—*Showing for each ratio the 5 cities in the entire list of 103 cities that stand lowest and the 5 that stand highest, together with the amounts of the ratios. (See Table 31.)*

RATIO OF SCHOOL EXPENSES TO POPULATION.

Lowest ratios.		Highest ratios.	
Cities.	Ratios.	Cities.	Ratios.
Jacksonville, Fla	1.74	Washington, D. C	6.40
Charleston, S. C	1.78	Springfield, Mass	6.09
Savannah, Ga	1.94	Newark, N. J	6.02
Chattanooga, Tenn	2.04	Des Moines, Iowa	6.01
Norfolk, Va	2.21	Spokane, Wash	5.84

RATIO OF SCHOOL EXPENSES TO TOTAL CITY EXPENSES.

Savannah, Ga	0.150	Joplin, Mo	0.530
Charleston, S. C	.177	Topeka, Kans	.530
Norfolk, Va	.192	York, Pa	.509
Jacksonville, Fla	.199	Scranton, Pa	.498
San Francisco, Cal	.201	New Castle, Pa	.492

RATIO OF SCHOOL EXPENSES TO EXPENSES FOR POLICE.

Savannah, Ga	1.04	Topeka, Kans	8.04
Jacksonville, Fla	1.06	Racine, Wis	7.92
Charleston, S. C	1.08	Passaic, N. J	7.45
Norfolk, Va	1.19	Oklahoma City, Okla	7.23
San Francisco, Cal	1.22	Spokane, Wash	7.07

AVERAGE COST PER PUPIL OF ELEMENTARY AND SECONDARY SCHOOLS.

Table 32 makes possible a comparison of the average cost per pupil of elementary and secondary schools in each city. It also contains the enrollment figures that have been used in all the computations of average cost made in this study and the date of the close of the fiscal year in each city.

The following table of frequencies shows the distribution of the ratios of average cost of elementary and secondary schools:

TABLE 14.—*Distribution of ratios of average cost of elementary and secondary schools.*

Ratio.	Number of cities.				
	Group I.	Group II.	Group III.	Group IV.	All.
1.00 to 1.49	....	1	1	1	3
1.50 to 1.99	2	8	7	8	25
2.00 to 2.49	5	4	10	3	22
2.50 to 2.99	1	....	5	4	10
3.00 to 3.49	....	2	3	....	5
3.50 to 3.99	2	....	....	1	3
4.00 to 4.49	....	....	1	....	1
4.50 to 4.99	....	....	....	....	....

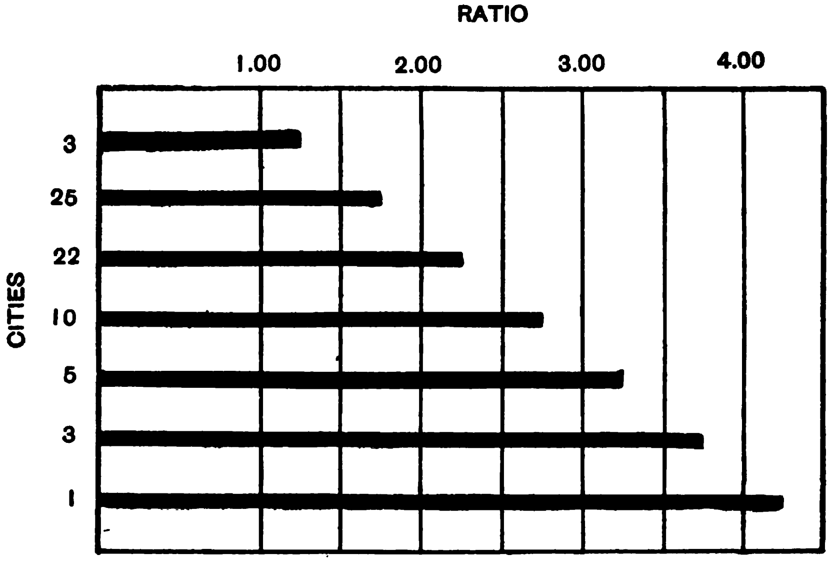

FIG. 9.—Ratios of average costs per pupil of secondary and elementary schools in all cities. This ratio may also be read as the number of dollars expended for secondary schools for each dollar expended for elementary schools.

The following table gives the names of cities in each group that are located at the principal points in the distribution of ratios of average costs of secondary and elementary schools in each group:

TABLE 15.—*Showing names of cities at various points in the distribution of ratios of costs of elementary and secondary schools, together with amount of ratio in each case.*

	Lowest.	Ratio.	Lower limit of middle 50 per cent.	Ratio.	Median.	Ratio.	Upper limit of middle 50 per cent.	Ratio.	Highest.	Ratio.
All cities	Wilkes-Barre, Pa.	1.33	Tacoma, Wash. Omaha, Nebr.	1.80	Bay City, Mich.	2.16	New Britain, Conn. Knoxville, Tenn.	2.60	Passaic, N. J.	4.04
Group I	Minneapolis, Minn.	1.75	San Francisco, Cal. Buffalo, N. Y.	1.97	Washington, D. C. Los Angeles, Cal.	2.27	Chicago, Ill. Newark, N. J.	2.65	Baltimore, Md.	3.90
Group II	Memphis, Tenn.	1.39	Nashville, Tenn. Grand Rapids, Mich.	1.71	Lowell, Mass.	1.84	St. Paul, Minn. Birmingham, Ala.	2.34	Scranton, Pa.	3.15
Group III	Wilkes-Barre, Pa.	1.33	Des Moines, Iowa	1.89	Elizabeth, N. J.	2.27	Harrisburg, Pa. Johnstown, Pa.	2.78	Passaic, N. J.	4.04
Group IV	Topeka, Kans.	1.41	New Castle, Pa.	1.72	York, Pa.	1.90	Malden, Mass. Racine, Wis.	2.47	Pueblo, Colo.	3.50

From the above table it may be seen (1) that there is a wide variation in the relative average cost of elementary and high schools; (2) that no territorial lines or division of cities by population can be drawn in making a differentiation between them, each section of the country and one State, Pennsylvania, being represented in almost every column. The extreme variation in all the cities included is 2.71. The extreme variations shown in the table indicate that proper balances are not being maintained in the school expenditures of some cities. More money in some cases should be spent upon the elementary schools; in others less money should be spent upon the high schools. The retardation and elimination statistics of such cities as have extreme ratios should be carefully studied in this connection. For instance, Baltimore, which has just been shown spends too little on its elementary schools rather than too much on its high schools, has a high percentage of retardation and elimination. More money is needed in that city for elementary schools, both to maintain its present curriculum and to widen the scope of those schools, although the expenses of the high schools should not be diminished. (See p. 94.) In some cities it would be a far better distribution of public funds to take away from high schools having high average cost and high percentage of funds devoted to them and to add the same to the broadening of courses in the elementary schools in order to meet the needs of those who are backward or who are losing interest in the present curriculum. This is true especially if the city has high percentages of retardation and elimination.

The question arises, What is the range of a proper ratio between average costs of elementary and high schools? The table above furnishes a tentative answer to the question for each group of cities and for all cities taken together. Taken all in all the best answer for all cities is, The ratio should lie between 1.80 and 2.60—a range of .80—with 2.16 as the best representative amount. The two former figures are limits of the middle 50 per cent for the entire list of cities and any variation below and above these amounts should have reasonable justification.

TABLE 16.—*Showing total school expenses and expenses of general control of school systems in 103 cities of 30,000 population and over, 1909.*

	Cities.	Total school expenses.	Board of education.	Finance offices.	Superintendent's office.	Other overhead expenses.	Total for general control.
	Grand total	$56,424,146	$566,896	$336,802	$760,775	$296,917	$1,961,390
	Group I	30,447,159	405,734	235,291	296,533	184,177	1,121,735
	Group II	11,133,770	53,811	30,554	162,706	51,805	298,876
	Group III	10,687,807	88,256	44,647	199,683	46,401	378,987
	Group IV	4,155,410	19,095	26,310	101,853	14,534	161,792
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.						
1	Chicago, Ill	$9,492,789	$90,925	$201,380	$36,929	$31,946	$361,180
2	St. Louis, Mo	2,798,654	193,866	7,609	7,000	23,075	231,550
3	Cleveland, Ohio	2,374,107	7,032	8,379	63,952	111,347	190,710
4	Baltimore, Md	1,824,823	20,474	....	15,248	3,714	39,436
5	Detroit, Mich	1,706,858	....	....	29,922	....	29,922
6	Buffalo, N. Y	1,607,378	4,929	....	13,141	....	118,070
7	San Francisco, Cal	1,717,249	11,959	....	30,325	....	42,284
8	Milwaukee, Wis	1,314,257	19,280	....	23,541	5,639	48,460
9	Newark, N. J	1,944,549	36,019	....	21,349	....	57,368
10	New Orleans, La	952,247	....	3,827	20,558	70	24,455
11	Washington, D. C	2,055,915	13,369	....	13,750	4,466	31,585
12	Los Angeles, Cal	1,288,852	4,758	14,096	11,600	3,920	34,374
13	Minneapolis, Minn	1,369,481	3,123	....	9,218	....	12,341
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.						
14	Jersey City, N. J	$960,225	$3,209	....	$9,179	$5,264	$17,652
15	Providence, R. I	954,168	....	....	25,323	5,779	31,102
16	St. Paul, Minn	755,981	5,962	....	7,100	....	13,062
17	Portland, Oreg	671,062	....	$4,417	9,000	....	13,417
18	Columbus, Ohio	693,826	....	6,170	5,440	13,184	24,794
19	Toledo, Ohio	645,916	3,800	800	3,500	12,505	20,605
20	Oakland, Cal	586,014	....	....	10,968	83	11,051
21	Syracuse, N. Y	584,536	4,578	....	4,800	1,500	10,878
22	New Haven, Conn	556,589	7,823	713	4,817	891	14,244
23	Birmingham, Ala	160,318	....	....	6,427	....	6,427
24	Memphis, Tenn	288,401	264	3,231	5,400	1,376	10,271
25	Scranton, Pa	552,007	....	13,538	16,506	1,680	31,724
26	Paterson, N. J	524,307	4,815	....	3,700	....	8,515
27	Omaha, Nebr	544,819	12,948	1,600	6,681	584	21,813
28	Grand Rapids, Mich	538,899	2,095	85	12,782	2,792	17,754
29	Nashville, Tenn	274,065	1,995	....	3,000	1,417	6,412
30	Lowell, Mass	429,964	....	....	5,761	1,200	6,961
31	Cambridge, Mass	507,322	....	....	11,568	....	11,568
32	Spokane, Wash	541,795	6,322	....	3,500	3,550	13,372
33	Albany, N. Y	363,556	....	....	7,254	....	7,254

TABLE 16.—*Showing total school expenses and expenses of general control of school systems in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

	Cities.	Total school expenses.	Board of education.	Finance offices.	Superintendent's office.	Other overhead expenses.	Total for general control.
34	Hartford, Conn	$535,300	$5,000	$1,867	$3,203	$1,182	$11,252
35	Trenton, N. J	408,423	2,680	....	5,500	....	8,180
36	New Bedford, Mass	331,048	....	....	10,525	....	10,525
37	Reading, Pa	282,263	....	1,800	7,920	....	9,720
38	Camden, N. J	419,283	....	....	8,392	....	8,392
39	Dallas, Tex	234,641	3,740	....	3,672	253	7,665
40	Springfield, Mass	505,700	....	....	11,790	2,946	14,736
41	Wilmington, Del	235,293	....	....	8,264	140	8,404
42	Des Moines, Iowa	495,745	4,333	875	5,217	3,252	13,677
43	Lawrence, Mass	293,398	....	....	4,842	806	5,648
44	Tacoma, Wash	363,142	4,466	....	7,927	4,175	16,568
45	Kansas City, Kans	253,355	9,349	50	4,273	2,286	15,958
46	St. Joseph, Mo	269,754	6,327	600	3,932	1,432	12,291
47	Troy, N. Y	330,346	2,900	194	4,950	439	8,483
48	Utica, N. Y	268,696	....	....	4,800	5,192	9,992
49	Elizabeth, N. J	212,509	2,663	....	3,600	....	6,263
50	Schenectady, N. Y	242,238	1,422	....	3,700	657	5,779
51	Hoboken, N. J	360,404	10,956	....	4,650	300	15,906
52	Manchester, N. H	157,726	360	....	3,582	....	3,942
53	Evansville, Ind	232,761	1,602	800	4,096	124	6,622
54	Norfolk, Va	144,720	1,229	228	1,615	1,328	4,400
55	Wilkes-Barre, Pa	221,600	....	6,503	6,178	266	12,947
56	Peoria, Ill	270,458	3,820	600	3,000	8,011	15,431
57	Erie, Pa	217,215	6,021	9,178	4,185	127	19,511
58	Savannah, Ga	124,860	....	....	4,500	1,127	5,627
59	Oklahoma, Okla	189,447	....	2,195	3,320	....	5,515
60	Harrisburg, Pa	263,430	4,040	2,020	2,800	2,520	11,380
61	Charleston, S. C	103,359	....	....	2,720	....	2,720
62	Portland, Me	257,563	....	....	3,515	1,192	4,707
63	East St. Louis, Ill	187,189	3,500	2,683	....	1,491	7,674
64	Holyoke, Mass	248,410	....	....	5,628	1,319	6,947
65	Jacksonville, Fla	85,088	330	2,070	3,404	....	5,804
66	Brockton, Mass	253,474	....	....	6,064	....	6,064
67	Bayonne, N. J	287,089	4,018	....	3,000	277	7,295
68	Johnstown, Pa	183,061	....	2,606	5,319	....	7,925
69	Passaic, N. J	209,331	3,164	....	3,540	....	6,704
70	Wichita, Kans	138,570	1,371	300	2,450	1,280	5,401
71	Covington, Ky	134,819	2,111	....	2,400	2,195	6,706
72	Allentown, Pa	162,076	....	6,535	4,964	350	11,849
73	Springfield, Ill	185,208	....	....	6,029	120	6,149
74	Saginaw, Mich	241,044	468	2,823	6,746	1,614	11,651
75	Canton, Ohio	157,771	2,386	720	3,481	....	6,587

TABLE 16.—*Showing total school expenses and expenses of general control of school systems in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

	Cities.	Total school expenses.	Board of education.	Finance offices.	Superintendent's office.	Other overhead expenses.	Total for general control.
76	Sioux City, Iowa	$201,948	....	....	$6,544	....	$6,544
77	Lancaster, Pa	137,387	....	$1,533	3,458	$203	5,194
78	Atlantic City, N. J	184,872	....	1,200	3,355	....	4,555
79	Little Rock, Ark	128,597	....	6,770	4,087	950	11,807
80	Rockford, Ill	163,741	$1,060	....	2,770	....	3,830
81	Bay City, Mich	168,253	500	250	3,550	2,001	6,301
82	York, Pa	146,104	....	2,435	5,304	1,200	8,939
83	Sacramento, Cal	220,688	....	....	4,262	....	4,262
84	Chattanooga, Tenn	86,702	1,340	....	2,556	75	3,971
85	Malden, Mass	226,888	....	....	5,475	....	5,475
86	Pueblo, Colo	187,326	2,133	1,850	5,756	....	9,739
87	Haverhill, Mass	184,473	....	....	3,087	2,347	5,434
88	New Britain, Conn	143,210	50	....	4,531	888	5,469
89	Topeka, Kans	201,880	1,408	350	3,400	....	5,158
90	Davenport, Iowa	226,280	1,800	100	2,750	2,187	6,837
91	Wheeling, W. Va	153,298	1,778	2,948	3,329	....	8,055
92	Chester, Pa	122,064	50	3,688	2,734	850	7,322
93	Dubuque, Iowa	116,346	1,480	420	2,700	36	4,636
94	Woonsocket, R. I	97,801	....	....	2,932	501	3,433
95	Racine, Wis	140,916	900	....	2,700	661	4,261
96	Knoxville, Tenn	79,215	....	....	3,490	....	3,490
97	New Castle, Pa	146,085	100	3,081	3,201	56	6,438
98	Joliet, Ill	117,329	2,617	....	4,512	772	7,901
99	Auburn, N. Y	123,028	1,868	....	4,321	440	6,629
100	Taunton, Mass	142,618	....	....	2,873	50	2,923
101	Oskosh, Wis	107,605	16	....	2,956	244	3,216
102	Joplin, Mo	120,347	300	1,685	3,060	900	5,945
103	Newport, Ky	80,409	1,695	....	2,160	173	4,028

TABLE 17.—*Showing expenses of instruction, operation, and maintenance of elementary schools, including kindergartens, in 103 cities of 30,000 population and over, 1909.*

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual-training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
	Grand total	$31,362,595	$987,692	$1,414,330	$3,246,078	$1,496,456	$99,018	$147,205	$674,531	$233,834	$46,321	$442,018	$2,810,129	$42,960,207
	Group I	17,184,477	410,444	677,736	1,749,075	688,568	47,868	83,290	369,102	113,938	24,791	227,512	1,622,601	23,199,402
	Group II	6,245,830	204,786	277,141	645,172	338,193	23,883	20,808	110,320	72,397	6,357	58,745	526,950	8,530,582
	Group III	5,742,997	260,777	354,545	608,734	332,955	18,314	32,291	123,539	83,545	11,758	102,525	471,758	8,093,738
	Group IV	2,189,291	111,685	104,908	243,097	136,740	8,953	10,816	71,570	13,954	3,415	53,236	188,820	3,136,485
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.													
1	Chicago, Ill	$5,501,792	$22,500	$136,115	$664,415	$255,643	....	$15,091	$39,611	$23,666	$15,573	$7,647	$678,651	$7,360,704
2	St. Louis, Mo	1,503,994	39,658	77,796	114,096	32,599	$5,337	13,962	27,710	3,517	1,483	7,085	78,953	1,906,210
3	Cleveland, Ohio	1,108,445	108,450	16,794	145,191	58,876	....	11,875	88,211	3,261	....	4,476	101,860	1,647,439
4	Baltimore, Md	1,065,375	2,995	65,062	100,921	55,521	....	8,404	200	2,654	....	10,301	117,667	1,429,100
5	Detroit, Mich	996,945	13,500	44,182	110,730	38,661	....	308	18,765	36,997	....	....	39,192	1,299,280
6	Buffalo, N. Y	825,588	114,625	50,995	78,724	42,983	13,439	9,896	38,321	11,045	4,231	32,415	77,082	1,299,344
7	San Francisco, Cal	1,049,003	....	7,547	134,153	8,677	12,420	1,493	38,029	3,210	....	18,072	59,412	1,332,016
8	Milwaukee, Wis	770,349	10,485	13,735	57,902	39,473	11,347	5,051	3,096	8,896	2,186	....	89,159	1,011,679
9	Newark, N. J	1,126,725	24,992	59,356	88,968	34,126	5,175	5,398	10,115	7,133	....	63,031	91,574	1,516,598
10	New Orleans, La	549,392	8,400	43,407	39,583	7,221	....	100	53,859	....	....	25,987	73,663	801,612
11	Washington, D. C	1,040,259	52,225	74,116	87,845	66,386	....	5,651	16,591	11,049	....	6,056	173,859	1,534,037
12	Los Angeles, Cal	820,494	....	12,784	50,989	12,082	150	6,041	14,230	2,510	1,318	7,612	41,529	969,739
13	Minneapolis, Minn	826,116	12,614	75,847	75,558	36,320	....	....	20,364	....	....	44,830	....	1,091,649
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.													
14	Jersey City, N. J	$637,202	$9,686	$29,203	$45,998	$29,067	....	$1,823	$5,094	$15,507	$170	$5,514	$44,180	$823,464
15	Providence, R. I	476,177	9,949	22,860	50,417	39,955	$4,775	1,214	2,795	....	....	5,869	70,699	684,710
16	St. Paul, Minn	442,073	8,225	2,000	82,048	22,281	3,755	....	14,134	....	....	....	21,686	596,202
17	Portland, Oreg	418,562	....	11,888	28,842	7,238	2,447	2,295	4,042	10,439	84	....	41,607	527,444
18	Columbus, Ohio	299,571	66,771	16,599	43,698	17,604	....	....	3,706	11,996	....	9,122	14,877	483,944

19	Toledo, Ohio	400,598	2,450	20,510	24,649	23,358	....	682	22,052	7,215	....	6,656	9,693	517,813
20	Oakland, Cal	368,371	....	11,412	25,389	4,693	1,723	1,032	3,716	5,222	3,061	9,346	28,981	462,936
21	Syracuse, N. Y	310,611	1,200	14,900	28,291	30,737	....	2,865	8,039	3,854	....	....	20,151	420,148
22	New Haven, Conn	304,456	31,750	15,218	36,724	22,042	....	1,757	8,835	588	1,957	974	6,389	430,690
23	Birmingham, Ala	84,289	12,433	754	6,785	3,148	535	74	1,356	....	....	130	4,801	114,305
24	Memphis, Tenn	185,073	8,110	9,408	20,159	5,505	1,443	500	2,424	....	....	6,925	6,841	246,388
25	Scranton, Pa	287,794	....	30,017	38,092	19,621	5,073	500	1,998	....	....	....	12,408	395,503
26	Paterson, N. J	322,018	1,000	7,782	23,650	8,572	1,095	80	2,040	....	....	3,731	56,848	426,816
27	Omaha, Nebr	306,487	....	13,887	34,503	18,926	....	713	4,264	5,236	....	1,447	32,211	417,674
28	Grand Rapids, Mich	270,174	37,068	11,700	26,579	10,496	1,152	2,755	1,943	4,661	....	2,400	41,381	410,329
29	Nashville, Tenn	171,561	5,300	4,473	13,013	3,537	660	....	2,754	....	200	1,601	27,840	230,939
30	Lowell, Mass	215,082	....	9,215	38,098	16,866	1,225	1,828	2,075	....	....	....	37,002	321,391
31	Cambridge, Mass	251,470	1,192	6,298	31,561	21,230	....	999	2,278	7,255	....	2,809	20,910	346,002
32	Spokane, Wash	284,727	4,932	25,037	28,676	16,460	....	729	14,975	830	455	....	13,913	390,784
33	Albany, N. Y	209,534	4,700	13,980	18,000	16,837	....	1,012	1,800	94	440	2,221	14,532	283,150

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn	$254,187	$30,600	$21,272	$27,382	$16,958	$2,308	$3,349	$15,382	....	$1,744	$2,926	$21,673	$397,781
35	Trenton, N. J	241,124	5,050	14,014	18,936	11,715	....	750	8,560	....	180	1,707	8,343	310,379
36	New Bedford, Mass	171,521	7,661	13,928	20,824	13,935	....	518	3,701	$1,427	....	1,046	17,996	252,557
37	Reading, Pa	159,871	1,595	10,544	23,709	10,453	....	100	2,497	822	....	3,000	7,099	219,690
38	Camden, N. J	259,107	500	21,493	29,573	12,291	369	421	2,336	2,867	....	8,043	15,139	352,139
39	Dallas, Tex	121,371	27,188	2,244	9,918	4,080	....	....	569	....	....	4,522	(1)	169,892
40	Springfield, Mass	230,794	18,980	17,303	27,148	24,241	....	3,534	6,947	4,433	....	2,590	13,803	349,773
41	Wilmington, Del	141,433	....	7,676	11,200	9,046	....	....	1,361	1,058	....	....	13,572	185,346
42	Des Moines, Iowa	258,789	6,867	28,821	29,781	13,962	2,029	852	2,390	2,798	....	....	23,460	369,749
43	Lawrence, Mass	158,282	8,055	8,418	17,465	13,497	....	1,778	4,816	....	....	244	13,623	226,178
44	Tacoma, Wash	182,473	23,084	11,410	17,625	7,825	1,439	629	4,276	931	....	3,440	4,697	257,829
45	Kansas City, Kans	136,342	....	3,946	12,870	7,318	1,157	173	1,551	728	....	528	9,290	173,903
46	St. Joseph, Mo	154,814	4,104	3,367	26,085	9,097	22	952	133	1,188	593	....	7,966	208,321
47	Troy, N. Y	154,341	6,831	7,037	17,845	15,194	....	1,037	3,070	63	2,645	5,222	32,161	245,446
48	Utica, N. Y	156,622	....	4,810	17,362	14,080	....	2,142	5,134	123	117	290	6,725	207,405
49	Elizabeth, N. J	114,503	2,700	12,530	11,450	5,289	579	1,787	1,108	....	90	6,924	3,721	160,681
50	Schenectady, N. Y	141,956	7,130	4,927	9,096	9,580	....	1,878	1,095	684	1,026	13,941	(1)	191,313
51	Hoboken, N. J	217,270	....	12,795	14,669	5,802	1,244	1,058	3,592	....	....	1,330	29,686	287,446
52	Manchester, N. H	92,949	....	4,124	6,280	10,368	1,165	683	1.299	599	....	1,256	6,807	125,530
53	Evansville, Ind	118,516	20,006	3,524	14,980	5,147	....	140	3,987	....	....	446	11,926	178,672
54	Norfolk, Va	97,210	....	2,186	11,707	2,890	....	502	1.088	647	....	1,606	5,462	123,298
55	Wilkes-Barre, Pa	122,697	2,188	14,201	12,636	7,651	515	532	1,539	....	....	15,006	(1)	176,965

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[1] Included in expenses for repairs and replacements of equipment.

TABLE 17.—*Showing expenses of instruction, operation, and maintenance of elementary schools, including kindergartens, in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Jaditors' supplies and sundry expenses.	Apparatus and manual-training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
56	Peoria, Ill.	$171,701	$6,607	$3,395	$15,085	$5,584		$702	$379	$3,949			$11,448	$218,850
57	Erie, Pa.	97,834	15,685	8,084	13,695	7,569		1,489	916	185		$885	4,517	150,859
58	Savannah, Ga.	90,294			4,087	1,588			538				1,887	98,394
59	Oklahoma, Okla.	101,653	5,000	6,288	8,858	3,175						5,820	9,209	140,003
60	Harrisburg, Pa.	121,918	2,800	16,835	17,520	7,295	$269	896	754			5,673	9,904	183,864
61	Charleston, S. C.	46,890		262	1,300				8,625				3,157	60,234
62	Portland, Me.	135,902	4,300	8,912	18,690	10,532	199	1,043	2,347	1,294	$536	1,112	14,161	199,028
63	East St. Louis, Ill.	88,034	21,293	4,392	19,417	3,321	1,654	308	1,448	1,199	965	1,267	6,762	150,060
64	Holyoke, Mass.	124,556	3,494	8,334	10,914	8,376	1,875	1,299	2,465			1,839	19,520	182,172
65	Jacksonville, Fla.	44,311			2,398	632			1,667	136		1,736	4,301	55,181
66	Brockton, Mass.	125,623	3,000	11,548	12,917	13,866	474	682	3,421				9,350	180,881
67	Bayonne, N. J.	175,756	2,340	14,746	14,133	6,000			7,787	758		3,497	20,000	245,017
68	Johnstown, Pa.	90,492	2,400	6,134	12,342	4,000	1,625	100					23,937	141,030
69	Passaic, N. J.	119,497		8,401	10,410	6,570	425	1,260	2,942		58	600	11,121	161,284
70	Wichita, Kans.	72,875	1,720	2,835	7,057	2,927			4,451			1,781	14,368	108,014
71	Covington, Ky.	78,533	5,030	166	7,320	1,749	310	475	1,538			331	11,691	107,143
72	Allentown, Pa.	82.977	1,545	6,495	9,951	4,797		325	2,889			809	16,209	125,997
73	Springfield, Ill.	99.584	6,484	489	8,973	3,252		79	2,921	4,514		1,694	12,281	140,221
74	Saginaw, Mich.	103,122	4,300	6,573	13,426	6,990	1,156	804	1,629	3,142	3,804	1,141	10,352	156,439
75	Canton, Ohio	85,273	2,240	10,086	11,700	4,313		14	391			273	4,484	118,774

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Jaditors' supplies and sundry expenses.	Apparatus and manual-training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
76	Sioux City, Iowa	$117,332	$1,700	$1,167	$14,214	$9,790	$827	$127	$3.294				$12,326	$160,777
77	Lancaster, Pa.	66,232		4,809	9,800	4,642	525	132	3.657			$3,552	6,920	100,269
78	Atlantic City, N. J.	87,725		10.799	7,991	9,236	[1] 3,000		16,538				11,090	146,379
79	Little Rock, Ark.	72,653	3,300	2,547	5.237	3,304	992	495	999			2,150	2,978	94,655
80	Rockford, Ill.	80,096	4,896	634	10,969	6,995		336	3,876	$1,804			10,220	119,826

81	Bay City, Mich.	81,039	11,150	4,722	10,243	4,335	644	286	1,382	....	....	361	8,477	122,539
82	York, Pa.	77,966	1,836	8,037	9,946	5,293	760	372	....	....	....	858	7,371	112,439
83	Sacramento, Cal.	131,541	2,500	3,862	11,676	1,595	....	649	1,946	1,296	$1,111	1,701	0,252	164,129
84	Chattanooga, Tenn.	56,435	....	1,193	3,384	1,732	277	65	1,317	....	....	....	5,348	69,751
85	Malden, Mass.	115,367	2,340	7,630	11,952	11,551	....	406	537	....	....	678	9,245	159,706
86	Pueblo, Colo.	100,884	8,004	4,649	12,164	3,967	435	618	1,149	....	....	2,303	4,660	138,833
87	Haverhill, Mass.	99,727	1,901	6,602	11,036	7,741	....	293	587	523	....	946	9,471	138,827
88	New Britain, Conn.	65,793	1,969	10,083	7,417	6,949	....	1,830	391	....	471	....	2,453	97,356
89	Topeka, Kans.	114,363	1,710	3,110	12,576	5,396	116	815	850	1,773	237	772	8,512	150,230
90	Davenport, Iowa.	90,232	22,398	1,013	9,554	4,080	....	48	875	1,633	180	7,789	23,997	161,799
91	Wheeling, W. Va.	84,286	14,729	1,222	6,180	4,124	....	989	2,116	1,040	....	1,403	11,885	127,974
92	Chester, Pa.	67,482	....	5,111	9,542	....	....	....	17,849	....	....	....	....	99,984
93	Dubuque, Iowa.	62,222	5,050	640	7,285	4,645	56	70	232	1,269	62	311	7,534	89,376
94	Woonsocket, R. I.	51,128	2,305	4,404	6,322	6,809	494	133	919	95	164	951	5,527	79,251
95	Racine, Wis.	81,352	4,307	1,313	8,276	3,640	....	716	933	2,215	221	661	2,144	105,778
96	Knoxville, Tenn.	46,972	665	701	4,547	968	210	31	609	....	....	2,805	3,011	60,519
97	New Castle, Pa.	79,363	3.330	7,295	10,230	2,825	20	795	2,934	....	....	65	9,316	116,173
98	Joliet, Ill.	55,479	2.446	2,750	9,258	4,318	....	822	1,224	....	....	661	5,043	81,501
99	Auburn, N. Y.	67,460	2,800	2,151	7,147	5,650	308	223	573	1,265	103	....	1,616	89,296
100	Taunton, Mass.	78,449	2,340	3,756	8,561	9,796	289	95	3,992	121	....	....	5,743	113,142
101	Oshkosh, Wis.	52,642	6,299	1,278	6,790	4,020	....	816	599	920	866	1,972	1,998	78,200
102	Joplin, Mo.	61,005	1,260	2,421	5,400	2.090	....	....	1,343	....	....	23,297	(2)	96,816
103	Newport, Ky.	44,066	2,450	1,009	5,400	1,249	....	204	899	....	....	....	5,683	60,960

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[1] Estimate.

[2] Included in expenses for repairs and replacements of equipment.

TABLE 18.—*Showing expenses of instruction, operation, and maintenance of secondary schools in 103 cities of 30,000 population and over, 1909.*

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
	Grand total	$6,309,322	$186,113	$371,893	$546,100	$236,076	$13,764	$58,277	$130,823	$132,949	$41,005	$60,113	$338,629	$8,425,064
	Group I	3,137,125	82,909	172,429	260,451	94,287	4,223	25,027	56,757	58,563	10,754	30,429	182,584	4,115,538
	Group II	1,402,483	30,736	73,255	120,190	58,067	3,663	12,432	28,736	28,824	23,697	9,730	58,395	1,850,208
	Group III	1,250,071	48,371	96,768	113,245	52,996	3,699	13,884	32,806	38,356	4,311	14,655	71,732	1,740,894
	Group IV	519,643	24,097	29,441	52,214	30,726	2,179	6,934	12,524	7,206	2,243	5,299	25,918	718,424

GROUP I.—CITIES HAVING A POPULATION OF 300,000 AND OVER IN 1910.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
1	Chicago, Ill	$820,868	$2,400	$48,447	$69,912	$27,931	...	$6,273	$6,174	$14,671	...	$802	$75,769	$1,073,247
2	St. Louis, Mo	306,525	...	26,923	38,873	10,068	$469	2,237	7,660	4,192	$59	866	9,699	407,571
3	Cleveland, Ohio	282,466	26,900	4,594	24,942	8,598	...	3,265	2,830	4,725	...	2,104	10,546	370,970
4	Baltimore, Md	190,207	4,200	25,788	17,475	4,065	...	934	283	3,229	...	821	12,857	259,859
5	Detroit, Mich	229,973	...	11,648	27,370	9,089	...	150	12,557	...	...	...	6,248	297,035
6	Buffalo, N. Y	131,768	12,250	11,253	12,200	4,222	1,111	3,198	5,889	4,885	1,369	790	9,895	198,330
7	San Francisco, Cal	178,070	...	660	9,326	1,260	1,500	510	4,023	762	...	1,205	9,210	206,526
8	Milwaukee, Wis	126,743	5,250	4,711	11,280	7,968	916	1,840	1,995	4,983	2,121	...	10,212	178,019
9	Newark, N. J	122,663	...	7,282	7,456	1,613	227	2,283	1,183	2,182	...	4,508	6,337	155,729
10	New Orleans, La	55,801	3,200	3,440	2,803	456	...	50	6,078	...	...	341	2,344	74,513
11	Washington, D. C	289,873	24,325	6,802	14,209	8,308	...	2,734	2,691	10,731	4,735	4,128	17,585	386,116
12	Los Angeles, Cal	210,643	...	2,747	10,749	3,160	...	1,553	4,464	5,960	2,470	2,477	11,882	256,105
13	Minneapolis, Minn	191,525	4,384	18,134	13,856	7,549	...	...	930	2,743	...	12,397	...	251,518

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
14	Jersey City, N. J	$64,457	...	$2,385	$8,284	$4,072	...	$207	$670	$1,842	...	...	$1,475	$83,392
15	Providence, R. I	126,253	$1,509	15,006	11,742	8,141	$572	816	1,094	...	$812	$1,714	9,969	177,628
16	St. Paul, Minn	106,778	...	...	14,507	3,971	676	...	3,227	...	8,036	...	4,337	141,532
17	Portland, Oreg	65,020	...	3,044	3,750	1,963	310	235	950	2,520	...	...	5,162	82,954
18	Columbus, Ohio	129,644	11,777	679	9,717	6,165	...	...	812	...	11,018	1,209	2,473	173,494

19	Toledo, Ohio	79,577	1,550	4,930	3,580	3,873	....	1,152	2,397	6,954	....	167	....	103,680
20	Oakland, Cal	82,823	....	281	4,418	928	483	361	1,672	1,599	406	2,272	2,774	98,017
21	Syracuse, N. Y	85,834	....	480	9,445	2,914	....	1,299	4,028	111	....	....	2,500	106,611
22	New Haven, Conn	63,297	5,700	4,715	7,772	3,510	....	838	1,331	887	270	156	981	89,457
23	Birmingham, Ala	23,144	2,100	178	3,084	1,321	242	816	359	2,300	270	74	610	34,448
24	Memphis, Tenn	19,553	....	216	1,680	298	140	....	585	....	227	210	....	22,909
25	Scranton, Pa	85,695	....	4,188	5,500	1,026	500	100	974	....	....	....	3,777	101,760
26	Paterson, N. J	56,019	....	3,318	2,000	....	....	....	100	....	....	326	....	61,763
27	Omaha, Nebr	72,608	....	5,729	5,153	2,666	....	79	2,759	1,098	....	816	2,679	93,587
28	Grand Rapids, Mich	66,885	8,100	3,913	5,650	2,148	448	943	320	160	610	100	3,236	92,513
29	Nashville, Tenn	23,864	....	420	1,070	130	50	....	200	....	....	75	1,100	26,909
30	Lowell, Mass	40,664	....	4,312	5,012	2,893	242	1,937	199	291	....	877	2,821	58,748
31	Cambridge, Mass	81,753	....	5,071	9,405	6,718	....	865	1,568	4,830	....	1,873	8,629	120,712
32	Spokane, Wash	84,837	....	9,313	5,771	3,764	....	1,244	4,247	5,829	1,092	....	3,328	119,425
33	Albany, N. Y	43,778	....	5,077	2,700	2,066	....	1,540	1,244	403	956	361	2,544	60,669

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn	$60,944	$4,000	$5,999	$4,844	$4,599	$791	$504	$3,899	....	....	$546	$1,913	$88,039
35	Trenton, N. J	38,138	....	3,309	2,435	1,024	....	350	673	$8,178	....	398	1,148	55,653
36	New Bedford, Mass	25,241	206	2,302	2,210	1,227	....	151	427	....	....	90	549	32,403
37	Reading, Pa	31,871	....	5,400	3,879	1,161	....	300	1,095	....	....	500	500	44,706
38	Camden, N. J	24,339	500	1,988	4,570	633	....	342	553	3,156	....	863	8,977	45,921
39	Dallas, Tex	39,286	2,925	748	4,185	1,359	....	....	284	1,659	$1,651	142	....	52,239
40	Springfield, Mass	73,367	8,300	7,800	10,302	4,895	....	2,264	4,424	1,867	....	316	3,356	116,891
41	Wilmington, Del	30,022	....	2,943	2,250	941	....	....	630	....	....	....	2,208	38,994
42	Des Moines, Iowa	61,213	7,200	1,921	7,230	4,448	407	535	227	3,202	....	....	9,273	95,656
43	Lawrence, Mass	29,566	....	2,523	1,335	1,568	....	1,081	109	....	....	25	349	36,556
44	Tacoma, Wash	58,165	4,047	3,622	4,077	2,309	195	129	1,854	3,355	599	2,482	800	81,634
45	Kansas City, Kans	44,035	....	1,989	5,006	1,861	469	1,206	1,213	2,637	212	610	1,541	60,779
46	St. Joseph, Mo	37,718	306	578	3,284	958	10	1,103	21	788	57	....	877	45,700
47	Troy, N. Y	34,913	792	270	3,558	1,635	15	562	714	470	....	1,507	4,264	48,700
48	Utica, N. Y	29,353	....	1,852	3,949	501	....	222	451	14	....	46	2,849	38,737
49	Elizabeth, N. J	20,132	....	2,122	1,765	637	105	22	191	....	....	668	1,294	26,936
50	Schenectady, N. Y	20,036	....	....	1,440	1,210	....	939	274	1,095	367	....	1,626	35,987
51	Hoboken, N. J	27,003	....	3,869	2,400	754	19	67	318	1,409	....	200	2,501	38,630
52	Manchester, N. H	16,527	....	2,364	1,350	1,109	165	234	297	....	....	449	755	23,250
53	Evansville, Ind	36,514	1,800	....	2,750	571	....	21	730	490	....	50	1,214	44,140

TABLE 18.—*Showing expenses of instruction, operation, and maintenance of secondary schools in 103 cities of 30,000 population and over, 1909*—Cont'd.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books stationery and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
54	Norfolk, Va	$13,018		322	800	180		19	90					14,429
55	Wilkes-Barre, Pa	23,400	62	1,155	1,200	303	32	124	445	785		1,438	(1)	28,944
56	Peoria, Ill	22,815	2,500	340	1,560	1,075		119	91	439			868	29,807
57	Erie, Pa	21,767	5,188	4,534	2,520	1,454		350	1,918			200	834	38,265
58	Savannah, Ga	14,649	1,500		806	181		82	60	679				17,957
59	Oklahoma, Okla	30,364		2,500	990	350						700	1,031	35,935
60	Harrisburg, Pa	35,592		3,973	3,234	1,705	89	379	75	2,268		427	2,236	49,928
61	Charleston, S. C	11,411			300				2,156				790	14,657
62	Portland, Me	33,057		4,073	2,640	1,591		165	260				3,051	44,837
63	East St. Louis, Ill	15,926	1,600	301	1,475	610	337	167	135		96	269	399	21,315
64	Holyoke, Mass	28,848	792	2,615	4,337	3,638	190	1,623	990			582	1,899	45,514
65	Jacksonville, Fla	13,125			375	210			556			579	1,802	16,647
66	Brockton, Mass	40,625		6,109	4,713	1,656	268	155	2,342	895	275		1,609	58,647
67	Bayonne, N. J	18,290		1,889	1,240	494			1,208				1,005	24,126
68	Johnstown, Pa	20,619	2,300	5,310	1,480	270	74	8					2,196	32,257
69	Passaic, N. J	22,807		4,257	960	450	66	196	65	2,605				31,406
70	Wichita, Kans	15,849	1,933	362	1,181	650			523				462	20,960
71	Covington, Ky	11,552			960	256	93	142	456			79	2,271	15,809
72	Allentown, Pa	16,010		1,769	725	1,000			500		410		500	20,914
73	Springfield, Ill	24,107		72	1,380	552		101	1,809	140		1,052	2,075	31,288
74	Saginaw, Mich	47,205	900	1,944	5,930	2,325	424	210	699	2,225	644	400	2,000	64,906
75	Canton, Ohio	21,652	1,520	4,144	1,620	646		12	44			37	1,120	30,795

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books stationery and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
76	Sioux City, Iowa	$20,912		$1,677	$2,948	$1,290	$172	$143	$500				$1,120	$28,762
77	Lancaster, Pa	16,600		1,500	1,884	1,500	80		500			$1,000	3,019	26,083
78	Atlantic City, N. J	22,607		1,200	2,000	1,500	[2]600		1,800					29,607
79	Little Rock, Ark	15,310		400	1,425	780	100	70	190			150	600	19,025
80	Rockford, Ill	25,486		247	4,965	2,575		907	909	$687		96	3,293	39,165

81	Bay City, Mich	26,125	[3]3,200	1,150	1,710	975	88	60	310	....	....	37	1,878	35,538
82	York, Pa	15,276	459	2,210	1,620	856	158	573	....	....	....	100	218	21,470
83	Sacramento, Cal	25,660	3,000	2,449	2,760	214	....	130	1,105	240	....	431	845	36,834
84	Chattanooga, Tenn	10,818	....	320	450	250	29	13	165	....	....	....	....	12,045
85	Malden, Mass	38,412	1,040	5,253	3,686	4,446	....	841	350	....	....	....	....	54,028
86	Pueblo, Colo	27,615	....	1,024	3,161	742	....	62	228	....	350	499	1,345	34,728
87	Haverhill, Mass	23,197	549	2,573	891	1,170	....	510	28	401	....	....	786	30,105
88	New Britain, Conn	12,818	3,265	510	1,678	1,127	....	216	870	....	256	....	561	20,801
89	Topeka, Kans	33,945	....	240	2,670	2,766	98	886	140	....	33	....	2,756	43,584
90	Davenport, Iowa	27,335	7,329	255	6,200	1,859	....	375	454	1,670	178	775	....	46,430
91	Wheeling, W. Va	11,150	996	474	480	291	....	54	1,016	....	....	193	347	15,001
92	Chester, Pa	11,398	....	....	1,500	....	....	....	1,200	....	....	....	....	14,098
93	Dubuque, Iowa	14,875	1,800	61	1,130	627	727	362	299	131	416	139	315	20,882
94	Woonsocket, R. I	8,460	45	337	560	297	25	26	97	....	101	22	296	10,266
95	Racine, Wis	16.540	2,154	912	1,350	991	....	360	267	1,643	581	420	842	26,060
96	Knoxville, Tenn	10,632	....	197	657	230	34	34	135	....	....	641	1,020	13,580
97	Newcastle, Pa	15,218	....	2,959	810	235	10	184	787	....	....	30	566	20,799
98	Joliet, Ill	21,315	....	361	2,305	964	....	287	90	84	167	34	300	25,907
99	Auburn, N. Y	18,510	....	142	833	1,044	100	209	197	154	19	....	1,391	22,599
100	Taunton, Mass	12,900	260	722	1,328	1,959	58	19	965	63	....	....	1,020	19,314
101	Oshkosh, Wis	15,107	....	1,044	1,563	1,246	....	416	191	394	395	732	1,012	22,100
102	Joplin, Mo	11,948	....	1,210	810	583	....	154	211	1,500	47	....	....	16,463
103	Newport, Ky	9,474	....	14	840	209	....	43	....	239	....	....	2,388	13,207

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[1] Included in expenses for repairs and replacements of equipment.

[3] Estimate.

TABLE 19.—*Showing total cost of instruction, operation, and maintenance of normal, evening, vacation, and special schools in 103 cities of 30,000 population and over, 1909.*

	Cities.	Normal schools.	Evening schools.	Vacation schools.	Special schools.	Total.
	Grand total	$341,328	$912,464	$96,849	$208,869	$1,559,510
	Group I	310,768	563,168	78,811	167,159	1,119,906
	Group II	2,890	173,926	8,714	16,687	202,217
	Group III	27,670	140,753	8,540	18,679	195,642
	Group IV		34,617	784	6,344	41,745
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.					
1	Chicago, Ill	$115,356	$159,307	$15,000	$46,449	$336,112
2	St. Louis, Mo	57,792	31,766	5,495	44,858	139,911
3	Cleveland, Ohio	60,185	27,012	12,162	10,569	109,928
4	Baltimore, Md		23,332			23,332
5	Detroit, Mich		25,580	10,871	9,422	45,873
6	Buffalo, N. Y	3,870	33,823	4,492		42,185
7	San Francisco, Cal		72,447		13,419	85,866
8	Milwaukee, Wis		19,148	2,334	42,442	63,924
9	Newark, N. J	13,590	123,246	27,397		164,233
10	New Orleans, La	21,472	15,756			37,228
11	Washington, D. C	38,503	21,363			59,866
12	Los Angeles, Cal		8,234			8,234
13	Minneapolis, Minn		2,154	1,060		3,214
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.					
14	Jersey City, N. J		$16,306	$1,238		$17,544
15	Providence, R. I		39,230			39,230
16	St. Paul, Minn			1,933		1,933
17	Portland, Oreg		4,460		$12,514	16,974
18	Columbus, Ohio	$2,890	634			3,524
19	Toledo, Ohio					
20	Oakland, Cal		10,151			10,151
21	Syracuse, N. Y		6,079	410		6,489
22	New Haven, Conn		7,169	2,000		9,169
23	Birmingham, Ala					
24	Memphis, Tenn		1,993			1,993
25	Scranton, Pa		12,100			12,100
26	Paterson, N J		8,156			8,156
27	Omaha, Nebr		5,465			5,465
28	Grand Rapids, Mich		8,571	1,476	4,173	14,220
29	Nashville, Tenn		2,366			2,366
30	Lowell, Mass		23,863			23,863
31	Cambridge, Mass		15,832	1,657		17,489
32	Spokane, Wash		1,482			1,482
33	Albany, N. Y		10,069			10,069
	GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.					
34	Hartford, Conn		$19,787	$4,217		$24,004
35	Trenton, N. J		6,296		$13,733	20,029
36	New Bedford, Mass	$13,668	6,771			20,439
37	Reading, Pa		5,156			5,156
38	Camden, N. J		2,766			2,766
39	Dallas, Tex		1,840			1,840
40	Springfield, Mass		13,187		3,770	16,957
41	Wilmington, Del		1,643			1,643
42	Des Moines, Iowa		1,001	3,227		4,228
43	Lawrence, Mass		12,654	1,096		13,750
44	Tacoma, Wash					
45	Kansas City, Kans					
46	St. Joseph, Mo					
47	Troy, N. Y		3,236			3,236
48	Utica, N. Y		3,467			3,467

TABLE 19.—*Showing total cost of instruction, operation, and maintenance of normal, evening, vacation, and special schools in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Normal schools.	Evening schools.	Vacation schools.	Special schools.	Total.
49	Elizabeth, N. J.	$2,453	$9,683			$12,136
50	Schenectady, N. Y.		3,893			3,893
51	Hoboken, N. J.		7,746			7,746
52	Manchester, N. H.		1,931			1,931
53	Evansville, Ind.		906			906
54	Norfolk, Va.		812			812
55	Wilkes-Barre, Pa.		1,429			1,429
56	Peoria, Ill.		970			970
57	Erie, Pa.	1,584	1,465			3,049
58	Savannah, Ga.		1,515			1,515
59	Oklahoma, Okla.		1,556			1,556
60	Harrisburg, Pa.	1,023	747			1,770
61	Charleston, S. C.					
62	Portland, Me.		1,348			1,348
63	East St. Louis, Ill.		832			832
64	Holyoke, Mass.		7,813			7,813
65	Jacksonville, Fla.					
66	Brockton, Mass.		5,178			5,178
67	Bayonne, N. J.		5,691			5,691
68	Johnstown, Pa.					
69	Passaic, N. J.		5,426			5,426
70	Wichita, Kans.	2,589				2,589
71	Covington, Ky.		230			230
72	Allentown, Va.		1,100			1,100
73	Springfield, Ill.	5,083	508			5,591
74	Saginaw, Mich.	1,270	2,170		$1,176	4,616
75	Canton, Ohio					

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

	Cities.	Normal schools.	Evening schools.	Vacation schools.	Special schools.	Total.
76	Sioux City, Iowa					
77	Lancaster, Pa.		$2,583			$2,583
78	Atlantic City, N. J.		1,241			1,241
79	Little Rock, Ark.					
80	Rockford, Ill.		345			345
81	Bay City, Mich.		438		$1,112	1,550
82	York, Pa.					
83	Sacramento, Cal.		10,077		1,204	11,281
84	Chattanooga, Tenn.					
85	Malden, Mass.		5,617			5,617
86	Pueblo, Colo.					
87	Haverhill, Mass.		2,447	$784		3,231
88	New Britain, Conn.		3,135			3,135
89	Topeka, Kans.					
90	Davenport, Iowa					
91	Wheeling, W. Va.					
92	Chester, Pa.					
93	Dubuque, Iowa					
94	Woonsocket, R. I.		2,421			2,421
95	Racine, Wis.		1,600		3,052	4,652
96	Knoxville, Tenn.					
97	New Castle, Pa.					
98	Joliet, Ill.		353			353
99	Auburn, N. Y.		808			808
100	Taunton, Mass.		3,049			3,049
101	Oshkosh, Wis.		563		976	1,479
102	Joplin, Mo.					
103	Newport, Ky.					

TABLE 20.—*Showing combined expenses of instruction, operation, and maintenance of schools of all kinds in 103 cities of 30,000 population and over, 1909.*

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
	Grand total	$38,865,622	$1,214,245	$1,847,202	$3,902,220	$1,756,634	$113,302	$249,987	$830,746	$386,896	$89,743	$495,931	$3,192,316	$52,944,844
	Group I	21,172,364	523,011	897,403	2,103,590	797,226	52,423	140,041	444,919	184,216	37,845	265,709	1,816,099	28,434,846
	Group II	7,804,582	241,334	358,725	780,702	402,671	27,714	39,363	140,652	101,998	30,097	69,020	586,149	10,583,007
	Group III	7,146,568	314,118	460,693	720,221	389,069	22,033	50,911	159,918	73,020	16,072	102,322	575,330	10,030,275
	Group IV	2,742,108	135,782	130,381	297,707	167,668	11,132	19,672	85,257	27,662	5,729	58,880	214,738	3,896,716
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.													
1	Chicago, Ill	$6,579,729	$27,900	$207,143	$762,188	$292,479	....	$32,381	$46,532	$38,337	$17,237	$8,449	$757,688	$8,770,063
2	St. Louis, Mo	1,895,900	41,972	110,184	189,283	44,229	$5,902	16,785	36,465	8,165	1,643	11,714	91,450	2,453,692
3	Cleveland, Ohio	1,478,793	140,335	24,723	178,623	68,288	....	15,245	93,044	7,986	....	6,988	114,312	2,128,337
4	Baltimore, Md	1,273,175	7,195	92,196	120,448	59,586	....	11,480	483	6,052	....	11,122	130,554	1,712,291
5	Detroit, Mich	1,262,231	13,500	55,830	141,773	47,750	....	458	38,209	36,997	....	....	45,440	1,642,188
6	Buffalo, N. Y	994,591	128,375	62,749	93,279	47,205	14,550	13,094	44,210	15,904	5,720	33,205	86,977	1,539,859
7	San Francisco, Cal	1,305,529	....	8,697	145,379	10,552	14,000	5,233	42,647	3,972	....	19,777	68,622	1,624,408
8	Milwaukee, Wis	937,159	21,595	18,907	71,325	47,678	12,419	11,275	5,091	24,495	4,307	....	99,371	1,253,622
9	Newark, N. J	1,382,722	27,334	72,659	101,878	36,071	5,402	16,430	16,569	9,315	....	69,556	98,619	1,836,555
10	New Orleans, La	631,103	13,200	50,472	42,866	7,842	....	1,100	61,723	....	....	26,836	78,211	913,353
11	Washington, D. C	1,374,587	84,607	84,331	104,377	74,694	....	8,385	19,918	21,780	5,150	10,746	191,444	1,980,019
12	Los Angeles, Cal	1,036,209	....	15,531	62,538	16,983	150	8,175	18,734	8,470	3,788	10,089	53,411	1,234,078
13	Minneapolis, Minn	1,020,636	16,998	93,981	89,633	43,869	....	....	21,294	2,743	....	57,227	....	1,346,381
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.													
14	Jersey City, N. J	$715,866	$9,686	$31,588	$54,842	$34,820	....	$2,684	$5,764	$17,811	$170	$5,514	$45,655	$924,400
15	Providence, R. I	632,152	11,458	40,182	65,126	50,507	$5,485	3,231	4,364	....	812	7,583	80,668	901,568
16	St. Paul, Minn	550,784	8,225	2,000	96,555	26,252	4,431	....	17,361	....	8,036	....	26,023	739,667
17	Portland, Oreg	495,255	....	17,557	33,682	9,812	2,757	3,175	5,322	12,959	84	....	46,769	627,372
18	Columbus, Ohio	429,719	81,373	17,278	53,520	23,769	....	....	4,608	11,996	11,018	10,331	17,350	660,962

19	Toledo, Ohio	480,175	4,000	25,440	28,229	26,731	....	1,784	24,449	14,169	....	6,823	9,693	621,493
20	Oakland, Cal	460,356	....	11,869	29,807	5,621	2,206	1,959	5,388	6,821	3,457	11,865	31,755	571,104
21	Syracuse, N. Y	402,174	1,200	15,389	38,077	33,651	....	4,164	12,477	3,465	....	....	22,651	533,248
22	New Haven, Conn	374,831	37,450	20,433	45,939	25,552	....	2,595	10,231	1,475	2,270	1,167	7,373	529,316
23	Birmingham, Ala	107,433	14,533	932	9,819	4,469	777	890	1,715	2,300	270	204	5,411	148,753
24	Memphis, Tenn	206,081	8,110	9,932	22,019	5,893	1,593	500	3,009	....	227	7,135	6,841	271,290
25	Scranton, Pa	383,589	....	34,705	44,592	20,647	5,573	1,100	2,972	....	....	....	16,185	509,363
26	Paterson, N. J	384,826	1,000	11,100	26,670	8,572	1,095	400	2,167	....	....	4,057	56,848	496,735
27	Omaha, Nebr	383,589	....	19,843	40,141	21,592	....	966	7,038	6,334	....	2,333	34,890	516,726
28	Grand Rapids, Mich	346,647	48,175	15,897	33,215	12,754	1,600	3,698	2,263	4,821	610	2,691	44,691	517,062
29	Nashville, Tenn	197,489	5,300	4,893	14,385	3,667	710	....	2,954	....	200	1,676	28,940	260,214
30	Lowell, Mass	273,518	....	14,152	46,012	20,637	1,487	4,576	2,424	306	....	377	40,513	404,002
31	Cambridge, Mass	346,479	1,192	12,006	42,360	28,598	....	3,116	3,846	12,385	....	4,682	29,539	484,203
32	Spokane, Wash	370,994	4,932	34,402	34,447	20,224	....	1,973	19,222	6,659	1,547	....	17,241	511,641
33	Albany, N. Y	262,675	4,700	19,127	21,265	18,903	....	2,552	3,078	497	1,396	2,582	17,113	353,888

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn	$331,885	$36,040	$29,022	$33,315	$21,770	$3,119	$5,717	$19,744	....	$1,744	$3,882	$23,586	$509.824
35	Trenton, N. J	293,507	5,305	19,053	22,540	13,089	....	1,665	10,318	$8,178	180	2,735	9,491	386.061
36	New Bedford, Mass	210,989	8,945	17,069	24,543	16,277	....	1,004	4,300	1,666	....	1,150	19,456	305,399
37	Reading, Pa	196,238	1,595	15,944	28,248	11,614	....	400	3,592	822	....	3,500	7,599	269,552
38	Camden, N. J	285.617	1,000	23,603	34,603	12,924	369	763	2,902	6,023	....	8,906	24,116	400,826
39	Dallas, Tex	162,497	30,113	2,992	14,103	5,439	....	....	853	1,659	1,651	4,664	....	223,971
40	Springfield, Mass	317,879	29,112	25,976	37,450	29,136	....	5,798	11,885	6,320	....	2,906	17,159	483,621
41	Wilmington, Del	173,075	....	10,619	13,450	9,987	....	....	2,014	1,058	....	....	15,780	225,983
42	Des Moines, Iowa	324,212	14,067	30,760	37,011	18,410	2,436	1,387	2,617	6,000	....	....	32,733	469.633
43	Lawrence, Mass	199,885	8,420	11,309	19,720	15,065	....	2,859	4,925	....	....	269	13,972	276,484
44	Tacoma, Wash	240,638	27,131	15,032	21,702	10,134	1,634	758	6,130	4,286	599	5,922	5,497	339,463
45	Kansas City, Kans	180,377	....	5,935	17,876	9,179	1,626	1,379	2,764	3,365	212	1,138	10,831	234,682
46	St. Joseph, Mo	192,532	4,410	3,945	29,369	10,055	32	2,055	154	1,976	650	....	8,843	254,021
47	Troy, N. Y	192,270	7,623	7,307	21,623	16,829	15	1,599	3,784	533	2,645	6,729	36,425	297,382
48	Utica, N. Y	189,442	....	6,162	21,311	14,581	....	2,364	5,585	137	117	336	9,574	249,609
49	Elizabeth, N. J	143,584	2,700	15,732	13,913	6,471	684	2,264	1,708	....	90	7,592	5,015	199,753
50	Schenectady, N. Y	174,480	7,130	4,927	10,941	10,790	....	2,817	1,369	1,779	1,393	....	15,567	231,193
51	Hoboken, N. J	249,760	....	16,664	17,381	7,156	1,263	2,008	4,043	1,740	....	1,530	32,277	333,822
52	Manchester, N. H	111,169	....	6,620	7,735	11,477	1,330	918	1,596	599	....	1,705	7,562	150,711
53	Evansville, Ind	155,718	21,806	3,524	17,948	5,718	....	161	4,717	490	....	496	13,140	223,718
54	Norfolk, Va	110,858	....	2,508	12,591	3,145	....	531	1,192	647	....	1,606	5,462	138,540
55	Wilkes-Barre, Pa	147,323	2,250	15,356	....	7,954	547	656	1,984	785	....	14,039	16,444	207,338

TABLE 20.—*Showing combined expenses of instruction, operation, and maintenance of schools of all kinds in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
56	Peoria, Ill.	$195,386	$9,107	$3,735	$16,745	$6,659		$821	$470	$4,388			$12,316	$249,627
57	Erie, Pa.	122,298	20,873	12,701	16,335	9,023		1,839	2,969	185		$1,099	4,851	192,173
58	Savannah, Ga.	106,355	1,500		4,929	1,809		109	598	679			1,887	117,866
59	Oklahoma, Okla.	133,301	5,000	8,988	9,920	3,525						6,520	10,240	177,494
60	Harrisburg, Pa.	158,995	2,800	20,988	20,859	9,000	$308	1,275	829	2,268		6,100	12,140	235,562
61	Charleston, S. C.	58,301		262	1,600				10,781				3,947	74,891
62	Portland, Me.	170,295	4,300	12,997	21,330	12,123	199	1,208	2,607	1,294	$536	1,112	17,212	245,213
63	East St. Louis, Ill.	104,555	22,893	4,703	21,067	3,931	1,991	524	1,583	1,199	1,064	1,536	7,161	172,207
64	Holyoke, Mass.	159,663	4,286	11,315	16,439	12,014	1,565	2,922	3,455			2,421	21,419	235,499
65	Jacksonville, Fla.	57,436			2,773	842			2,223	136		2,315	6,103	71,828
66	Brockton, Mass.	169,860	3,000	18,488	18,121	15,522	742	837	6,007	895	275		10,959	244,706
67	Bayonne, N. J.	198,910	2,340	17,133	15,702	6,494			8,995	758		3,497	21,005	274,834
68	Johnstown, Pa.	111,111	4,700	11,444	13,822	4,270	1,699	108					26,133	173,287
69	Passaic, N. J.	146,841		12,809	11,698	7,020	491	1,866	3,007	2,605	58	600	11,121	198,116
70	Wichita, Kans.	90,786	3,653	3,197	8,238	3,577			4,974	491		1,781	14,866	131,563
71	Covington, Ky.	90,315	5,030	166	8,280	2,005	403	617	1,994			410	13,962	123,182
72	Allentown, Pa.	99,887	1,545	8,264	10,776	5,797		425	3,389		410	809	16,709	148,011
73	Springfield, Ill.	127,116	6,484	574	11,098	3,984		217	4,955	4,692		3,166	14,814	177,100
74	Saginaw, Mich.	154,297	5,200	8,580	19,796	9,315	1,580	1,014	2,471	5,367	4,448	1,541	12,352	225,961
75	Canton, Ohio.	106,925	3,760	14,230	13,320	4,959		26	435			310	5,604	149,569

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

	Cities.	Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Janitors, engineers, and firemen.	Fuel.	Water.	Light and power.	Janitors' supplies and sundry expenses.	Apparatus and manual training equipment.	School libraries.	Repairs and replacements of equipment.	Repairs to buildings.	Total.
76	Sioux City, Iowa.	$138,244	$1,700	$2,844	$17,162	$11,080	$999	$270	$3,794				$13,446	$189,539
77	Lancaster, Pa.	84,273			12,000	6,142	605	526	4,157	$6,741		$4,552	9,939	128,935
78	Atlantic City, N. J.	111,573		11,999	9,991	10,736	[1] 3,500		18,338				11,090	177,227
79	Little Rock, Ark.	87,963	3,300	2,947	6,662	4,064	1,092	565	1,189			2,300	3,578	113,680
80	Rockford, Ill.	105,882	4,896	881	15,979	9,570		1,243	4,785	2,491		96	13,513	159,336

81	Bay City, Mich	108,348	14,350	6,060	12,045	5,370	782	323	1,642	....	....	398	10,355	159,628
82	York, Pa	98,242	2,295	10,247	11,566	6,149	918	945	....	....	....	958	7,589	133,909
83	Sacramento, Cal	164,449	5,500	7,871	15,136	1,809	....	1,468	3,835	1,536	1,111	2,432	7,097	212,244
84	Chattanooga, Tenn	67,253	....	1,513	3,834	1,982	306	78	1,482	....	....	....	5,348	81,796
85	Malden, Mass	158,351	3,380	13,196	15,813	15,997	....	1,797	895	....	....	678	9,245	219,352
86	Pueblo, Colo	128,499	8,004	5,673	15,325	4,709	435	680	1,377	....	50	2,802	6,005	173,559
87	Haverhill, Mass	126,155	2,450	9,175	11,927	8,911	....	803	615	924	....	946	10,257	172,163
88	New Britain, Conn	81,346	5,234	10,688	9,375	8,076	....	2,046	786	....	727	....	3,014	121,292
89	Topeka, Kans	148,308	1,710	3,350	15,246	8,162	214	1,701	990	1,773	270	772	11,268	193,764
90	Davenport, Iowa	117,567	29,727	1,268	15,754	5,939	....	423	1,329	3,303	358	8,564	23,997	208,229
91	Wheeling, W. Va	95,436	15,725	1,696	6,660	4,415	....	1,043	3,132	1,040	....	1,596	12,232	142,975
92	Chester, Pa	78,880	....	5,111	11,042	....	....	....	19,049	....	....	....	....	114,082
93	Dubuque, Iowa	77,097	6,850	701	8,415	5,272	783	432	531	1,400	478	450	7,849	110,258
94	Woonsocket, R. I	61,557	2,350	4,856	7,114	7,106	519	252	1,028	95	265	973	5,823	91,938
95	Racine, Wis	102,142	6,461	2,239	9,801	4,773	....	1,076	1,200	3,858	873	1,061	2,986	136,490
96	Knoxville, Tenn	57,604	665	898	5,204	1,198	244	65	744	....	....	3,446	4,031	74,099
97	New Castle, Pa	94,581	3,330	10,254	11,040	3,060	30	979	3,721	....	....	95	9,882	136,972
98	Joliet, Ill	77,147	2,446	3,111	11,563	5,282	....	609	1,314	84	167	695	5,343	107,761
99	Auburn, N. Y	86,698	2,800	2,293	8,030	6,694	408	432	800	1,419	122	....	3,007	112,703
100	Taunton, Mass	93,803	2,600	4,528	10,200	11,755	347	283	5,042	184	....	....	6,763	135,505
101	Oshkosh, Wis	69,217	6,299	2,328	8,373	5,266	....	1,232	790	1,314	1,261	2,749	3,010	101,839
102	Joplin, Mo	72,953	1,260	3,631	6,210	2,673	....	154	1,554	1,500	47	23,297	....	113,279
103	Newport, Ky	53,540	2,450	1,023	6,240	1,458	....	247	1,138	....	....	....	8,071	74,167

[1] Estimate.

TABLE 21.—*Showing miscellaneous expenses of school systems in 103 cities of 30,000 population and over, 1909.*

	City.	School census and elections.	Truant officers and police.	Medical inspection and nurses.	Pensions.	Rent.	Insurance.	Transportation of pupils.	Payments to schools and institutions.	Other miscellaneous expenses.	Total.
	Grand total	$73,029	$204,240	$100,333	$168,433	$241,005	$158,588	$32,910	$420,644	$118,730	$1,517,912
	Group I	34,583	107,779	63,038	122,727	167,190	22,566	13,264	305,389	54,042	890,578
	Group II	16,262	30,900	14,709	21,291	34,493	49,929	668	37,793	45,842	251,887
	Group III	15,386	45,987	18,647	24,415	32,357	59,401	13,860	62,077	6,415	278,545
	Group IV	6,798	19,574	3,939		6,965	26,692	5,118	15,385	12,431	96,902
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.										
1	Chicago, Ill.	$5,278	$46,884	$24,700	$67,883	$52,160	$99	$8,991	$122,481	$33,070	$361,546
2	St. Louis, Mo.	4,500	14,667	2,500		4,159	2,256	4,058	73,243	8,029	113,412
3	Cleveland, Ohio	3,583	9,553		6,178	1,606	1,014		33,126		55,060
4	Baltimore, Md.		9,020	6,000		47,089	155		9,007	1,825	73,096
5	Detroit, Mich.	4,522	8,000	6,750	12,532	2,750	194				34,748
6	Buffalo, N. Y.		7,840	2,600	15,067	4,875	5,939		13,138		49,449
7	San Francisco, Cal.	8,127			6,020	7,513			28,308	589	50,557
8	Milwaukee, Wis.	2,197	5,250			1,920		215		2,593	12,175
9	Newark, N. J.			7,247	15,067	5,649	2,180		14,036	6,457	50,636
10	New Orleans, La.			3,900		9,060				1,479	14,439
11	Washington, D. C.		2,365	6,091		23,805			12,050		44,311
12	Los Angeles, Cal.	6,376	2,000	3,250		5,264	3,510				20,400
13	Minneapolis, Minn.		2,200			1,380	7,209				10,789
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.										
14	Jersey City, N. J.		$2,125	$1,833	$3,697		$8,915			$1,603	$18,173
15	Providence, R. I.	$1,867	3,752	1,565	7,308	$825	154		$5,822	205	21,498
16	St. Paul, Minn.		900			2,047	305				3,252
17	Portland, Oreg.	445	1,200	808		610	10,634			16,576	30,273
18	Columbus, Ohio	1,616	1,650						4,804		8,070
19	Toledo, Ohio	1,012	2,806								3,818
20	Oakland, Cal.	2,512	720			40	587				3,859

21	Syracuse, N. Y		1,920	4,131	5,041	1,620	1,953		10,245	15,500	40,410
22	New Haven, Conn	902	1,337	1,770		3,474	5,546				13,029
23	Birmingham, Ala	543				492	3,028		1,075		5,138
24	Memphis, Tenn	1,117				1,639	4,084				6,840
25	Scranton, Pa		1,179			8,127	1,614				10,920
26	Paterson, N. J			1,500	3,078	13,267	264		948		19,057
27	Omaha, Nebr	2,309	1,296			228	2,072		375		6,280
28	Grand Rapids, Mich	1,836	1,320			646				281	4,083
29	Nashville, Tenn	875		500		1,200	4,864				7,439
30	Lowell, Mass		4,291			278	1,344	$325	11,707	1,056	19,001
31	Cambridge, Mass	537	3,650	2,607	1,528		170	324	2,735		11,551
32	Spokane, Wash	691	1,080				4,390			10,621	16,782
33	Albany, N. Y		1,674		639			19	82		2,414

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn	$1,133	$1,350	$1,800		$2,200	$7,011	$730			$14,224
35	Trenton, N. J		1,185	1,289	$3,535	4,170	2,468		$1,535		14,182
36	New Bedford, Mass	555	3,419			2,261		509	8,380		15,124
37	Reading, Pa		720	107	1,200		964				2,991
38	Camden, N. J		2,880	2,400	3,997	116	672				10,065
39	Dallas, Tex	846				575	1,584				3,005
40	Springfield, Mass	450	2,375	2,846				1,129	543		7,343
41	Wilmington, Del	279				264	363				906
42	Des Moines, Iowa	694	1,485	790			1,763	882	2,413	$4,408	12,435
43	Lawrence, Mass	722	3,500	2,500		1,380	250		2,200	714	11,266
44	Tacoma, Wash	1,405	720				3,232		1,754		7,111
45	Kansas City, Kans	540	936				1,239				2,715
46	St. Joseph, Mo	1,292	900	420		378	452				3,442
47	Troy, N. Y	80	1,500		2,679	1,940	595		17,487	200	24,481
48	Utica, N. Y		1,800			2,860	4,435				9,095
49	Elizabeth, N. J		400	950	1,147	700	2,037	34	1,225		6,493
50	Schenectady, N. Y		1,590	900	2,746		30				5,266
51	Hoboken, N. J		2,200		2,834	1,500	2,140	1,502		500	10,676
52	Manchester, N. H	973	1,150			128	822				3,073
53	Evansville, Ind	450	840			250	460			421	2,421
54	Norfolk, Va					1,755	25				1,780
55	Wilkes-Barre, Pa		415				900				1,315
56	Peoria, Ill	509	720		75	1,064	3,032				5,400
57	Erie, Pa	393	1,140				3,826			172	5,531
58	Savannah, Ga	793				198	376				1,367

TABLE 21.—*Showing miscellaneous expenses of school systems in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	City.	School census and elections.	Truant officers and police.	Medical inspection and nurses.	Pensions.	Rent.	Insurance.	Transportation of pupils.	Payments to schools and institutions.	Other miscellaneous expenses.	Total.
59	Oklahoma, Okla.	$32	$1,350			$468	$4,588				$6,438
60	Harrisburg, Pa.		570	$850	$3,872		526		$670		6,488
61	Charleston, S. C.				1,492		1,187		23,069		25,748
62	Portland, Me.	1,063	873			135	3,831	$1,741			7,643
63	East St. Louis, Ill.	1,290	2,074			2,206	1,738				7,308
64	Holyoke, Mass.	197	2,846	900		890		738	393		5,964
65	Jacksonville, Fla.					65	538	6,495	358		7,456
66	Brockton, Mass.	371	715	1,470				100	58		2,714
67	Bayonne, N. J.		1,000	625		2,619	716				4,960
68	Johnstown, Pa.		450			75	1,324				1,849
69	Passaic, N. J.		800	800	838	600	901		572		4,511
70	Wichita, Kans.		450			368	368		420		1,606
71	Covington, Ky.	547	1,474			2,532	378				4,931
72	Allentown, Pa.		900				1,316				2,216
73	Springfield, Ill.		780			660	519				1,959
74	Saginaw, Mich.	402					2,030		1,000		3,432
75	Canton, Ohio.	370	480				765				1,615

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

	City.	School census and elections.	Truant officers and police.	Medical inspection and nurses.	Pensions.	Rent.	Insurance.	Transportation of pupils.	Payments to schools and institutions.	Other miscellaneous expenses.	Total.
76	Sioux City, Iowa.		$600			$432	$3,385	$1,448			$5,865
77	Lancaster, Pa.		1,100	$500			108		$800	$750	3,258
78	Atlantic City, N. J.		1,890	1,200							3,090
79	Little Rock, Ark.	$325					2,785				3,110
80	Rockford, Ill.	175	400								575
81	Bay City, Mich.	573	1,272				484				2,329
82	York, Pa.		405				1,751			1,100	3,256
83	Sacramento, Cal.	596	1,063			1,270	1,253				4,182
84	Chattanooga, Tenn.	133				297	268		225	12	935
85	Malden, Mass.	298	1,000	530					233		2,061

86	Pueblo, Colo.	810	1,350				1,795			73	4,028
87	Haverhill, Mass.	138	796	373		1,324	1,875	1,858	512		6,876
88	New Britain, Conn.	302	700				1,807	402	13,238		16,449
89	Topeka, Kans.	239	360				2,359				2,958
90	Davenport, Iowa	242	600				1,295			9,077	11,214
91	Wheeling, W. Va.	290	900			1,058	20				2,268
92	Chester, Pa.		660								660
93	Dubuque, Iowa	406	360			600	86				1,452
94	Woonsocket, R. I.	329	1,562	150		104	285				2,430
95	Racine, Wis.	165									165
96	Knoxville, Tenn.			300		276	1,007		43		1,626
97	New Castle, Pa.		405			139	2,131				2,675
98	Joliet, Ill.	189	396			529	553				1,667
99	Auburn, Mass.	427	500	86		700	564			1,419	3,696
100	Taunton, Mass.	240	750	800			656	1,410	334		4,190
101	Oskosh, Wis.	152	585				1,813				2,550
102	Joplin, Mo.	403	720								1,123
103	Newport, Ky.	366	1,200			236	412				2,214

TABLE 22.—*Showing expenses of instruction, operation, and maintenance of kindergartens in 103 cities of 30,000 population and over, 1909.*

		Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Other current expenses.	Total.
	Grand total	$1,205,978	$18,271	$39,549	$30,543	$1,294,341
	Group I	771,872	11,717	25,551	12.092	821,232
	Group II	208,850	2,904	5,443	6,800	223,997
	Group III	170,142	2,800	7,036	11,019	190,997
	Group IV	55,114	850	1,519	632	58,115
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 AND OVER IN 1910.					
1	Chicago, Ill	$198,403		$6,117	$5,253	$209,773
2	St. Louis, Mo	152,358	$5,762	3,937	744	162,801
3	Cleveland, Ohio	53,009	1,500	2,111	2,892	59,512
4	Baltimore, Md					
5	Detroit, Mich	96,835		3,906		100,741
6	Buffalo, N. Y	23,470	1,200	958	1,556	27,184
7	San Francisco, Cal					
8	Milwaukee, Wis	63,650				63,650
9	Newark, N. J					
10	New Orleans, La	38,500		3,200		41,700
11	Washington, D. C	71,230	3,255	2,620	1,502	78,607
12	Los Angeles, Cal	66,927		2,682	110	69,719
13	Minneapolis, Minn	7,490		20	35	7,545
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.					
14	Jersey City, N. J					
15	Providence, R. I	$28,945	$904			$29,849
16	St. Paul, Minn					
17	Portland, Oreg					
18	Columbus, Ohio					
19	Toledo, Ohio	37,003		$895	$2,755	40,653
20	Oakland, Cal	4,560		150		4,710
21	Syracuse, N. Y	18,000				18,000
22	New Haven, Conn	19,400	1,100	643	3,719	24,862
23	Birmingham, Ala					
24	Memphis, Tenn					
25	Scranton, Pa	14,915		2,000		16,915
26	Paterson, N. J					
27	Omaha, Nebr	36,438		1,033		37,471
28	Grand Rapids, Mich					
29	Nashville, Tenn					
30	Lowell, Mass	12,930		546		13,476
31	Cambridge, Mass	17,809		176	326	18,311
32	Spokane, Wash					
33	Albany, N. Y	18,850	900			19,750
	GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.					
34	Hartford, Conn	$29,718	$700	$1,811		$32,229
35	Trenton, N. J					
36	New Bedford, Mass					
37	Reading, Pa					
38	Camden, N. J	4,000		399		4,399
39	Dallas, Tex					
40	Springfield, Mass	15,090	300	418	$643	16,451
41	Wilmington, Del					
42	Des Moines, Iowa	24,368	1,800	894	5,674	32,736
43	Lawrence, Mass					
44	Tacoma, Wash					
45	Kansas City, Kans	450		73		523

TABLE 22.—*Showing expenses of instruction, operation, and maintenance of kindergartens in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 in 1910—Continued.

		Salaries of teachers.	Salaries and expenses of supervisors.	Text-books, stationery, and general school supplies.	Other current expenses.	Total.
46	St. Joseph, Mo					
47	Troy, N. Y	$12,653		$762		$13,415
48	Utica, N. Y	12,613			$750	13,363
49	Elizabeth, N. J					
50	Schenectady, N. Y	6,564		547		7,111
51	Hoboken, N. J	15,568		650		16,218
52	Manchester, N. H	1,909		169	14	2,092
53	Evansville, Ind	7,350		104	24	7,478
54	Norfolk, Va					
55	Wilkes-Barre, Pa					
56	Peoria, Ill	6,829		78		6,907
57	Erie, Pa	1,790		143	142	2,075
58	Savannah, Ga					
59	Oklahoma, Okla	4,185				4,185
60	Harrisburg, Pa					
61	Charleston, S. C					
62	Portland, Me	3,675		319	3,532	7,526
63	East St. Louis, Ill					
64	Holyoke, Mass	9,136		198		9,334
65	Jacksonville, Fla					
66	Brockton, Mass					
67	Bayonne, N. J	6,720		471		7,191
68	Johnstown, Pa					
69	Passaic, N. J					
70	Wichita, Kans					
71	Covington, Ky	6,954			240	7,194
72	Allentown, Pa					
73	Springfield, Ill					
74	Saginaw, Mich					
75	Canton, Ohio	570				570
	GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.					
76	Sioux City, Iowa					
77	Lancaster, Pa					
78	Atlantic City, N. J					
79	Little Rock, Ark					
80	Rockford, Ill					
81	Bay City, Mich					
82	York, Pa					
83	Sacramento, Cal	$10,440		$107	$120	$10,667
84	Chattanooga, Tenn					
85	Malden, Mass					
86	Pueblo, Colo	7,963		253		8,216
87	Haverhill, Mass	3,355				3,355
88	New Britain, Conn	5,574		222		5,796
89	Topeka, Kans	1,080			45	1,125
90	Davenport, Iowa					
91	Wheeling, W. Va					
92	Chester, Pa					
93	Dubuque, Iowa	4,550	$850	143		5,543
94	Woonsocket, R. I	2,372		220	466	3,058
95	Racine, Wis	7,680		272		7,952
96	Knoxville, Tenn					
97	New Castle, Pa					
98	Joliet, Ill					
99	Auburn, N. Y	3,225			1	3,226
100	Taunton, Mass					
101	Oshkosh, Wis	8,875		302		9,177
102	Joplin, Mo					
103	Newport, Ky					

TABLE 23.—*Showing for each item of expense of general control the percentage of total expenses, based on Table 16.*

	Cities.	Board of education.		Finance offices.		Superintendent's office.		Other overhead expenses.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
	Group I: Median	0.69	6	0.40	3	0.90	7	0.42	4	2.56	7
	Middle, 50 per cents	.345 to 1.30	4 to 8	......	......	.67 to 1.80	3 to 8	......	......	1.80 to 3.69	4 to 10
	Group II: Median	.76	5+	.66	5	1.295	10+	.50	7+	2.415	10+
	Middle, 50 per cents	.485 to .855	4 to 6	.13 to 1.12	3 to 7	.87 to 1.97	6 to 13	.27 to .575	5 to 9	1.88 to 3.30	5 to 14
	Group III: Median	1.325	12+	.70	9+	1.78	21	.54	11	3.28	19+
	Middle, 50 per cents	.84 to 1.59	7 to 17	.23 to 1.40	5 to 14	1.50 to 2.50	10 to 29	.12 to .92	5 to 18	2.62 to 4.45	10 to 29
	Group IV: Median	.71	9	1.11	6	2.47	13+	.51	9	3.78	14+
	Middle, 50 per cents	.25 to 1.27	5 to 13	.36 to 1.90	3 to 9	2.01 to 3.07	7 to 20	.17 to .735	5 to 13	2.99 to 5.00	8 to 21
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.										
1	Chicago, Ill	0.96	7	2.11	5	0.39	2	0.34	3	3.80	11
2	St. Louis, Mo	6.93	11	.28	1	.26	1	.80	5	8.27	13
3	Cleveland, Ohio	.29	2	.34	2	2.70	11	4.70	7	8.03	12
4	Baltimore, Md	1.13	8	......	......	.84	5	.20	1	2.17	5
5	Detroit, Mich	......	......	......	......	1.80	9	......	......	1.80	4
6	Buffalo, N. Y	.32	3	......	......	.83	4	......	......	1.15	2
7	San Francisco, Cal	.69	6	......	......	1.77	8	......	......	2.46	6
8	Milwaukee, Wis	1.47	9	......	......	1.80	9	.42	4	3.69	10
9	Newark, N. J	1.84	10	......	......	1.10	7	......	......	2.94	9
10	New Orleans, La	......	......	.40	3	2.16	10	......	......	2.56	7
11	Washington, D. C	.65	5	......	......	.67	3	.22	2	1.54	3
12	Los Angeles, Cal	.37	4	1.10	4	.90	6	1.30	6	2.67	8
13	Minneapolis, Minn	.23	1	......	......	.67	3	......	......	.90	1
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.										
14	Jersey City, N. J	0.33	2	......	......	0.95	8	0.54	9	1.82	3
15	Providence, R. I	......	......	......	......	2.65	16	.61	10	3.26	13
16	St. Paul, Minn	.79	6	......	......	.94	7	......	......	1.73	2
17	Portland, Oreg	......	......	0.66	5	1.34	11	......	......	2.00	7
18	Columbus, Ohio	......	......	.89	6	.79	4	1.90	12	3.58	16
19	Toledo, Ohio	.58	4	.12	2	.53	1	1.96	13	3.19	12
20	Oakland, Cal	......	......	......	......	1.87	12	.01	1	1.88	5
21	Syracuse, N. Y	.79	6	......	......	.82	5	.26	4	1.87	4
22	New Haven, Conn	1.40	8	.13	3	.87	6	.16	3	2.56	11
23	Birmingham, Ala	......	......	......	......	4.00	18	......	......	4.00	17
24	Memphis, Tenn	.09	1	1.12	7	1.87	12	.48	7	3.56	15
25	Scranton, Pa	......	......	2.45	9	2.99	17	.30	6	5.74	18
26	Paterson, N. J	.92	7	......	......	.70	3	......	......	1.62	1
27	Omaha, Nebr	2.38	9	.27	4	1.25	10	.10	2	4.00	17
28	Grand Rapids, Mich	.39	3	.02	1	2.37	15	.52	8	3.30	14
29	Nashville, Tenn	.73	5	......	......	1.10	9	.52	8	2.35	9
30	Lowell, Mass	......	......	......	......	1.34	11	.28	5	1.62	1
31	Cambridge, Mass	......	......	......	......	2.24	14	......	......	2.24	8
32	Spokane, Wash	......	......	1.17	8	.65	2	.66	11	2.48	10
33	Albany, N. Y	......	......	......	......	1.97	13	......	......	1.97	6
	GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.										
34	Hartford, Conn	0.94	10	0.35	7	0.60	1	0.21	7	2.10	4
35	Trenton, N. J	.65	5	......	......	1.35	7	......	......	2.00	3
36	New Bedford, Mass	......	......	......	......	3.18	33	......	......	3.18	17
37	Reading, Pa	......	......	.60	9	2.80	30	......	......	3.40	21
38	Camden, N. J	......	......	......	......	2.00	22	......	......	2.00	3
39	Dallas, Tex	1.59	17	......	......	1.56	12	.10	4	3.25	19
40	Springfield, Mass	......	......	......	......	2.33	27	.59	12	2.92	14

TABLE 23.—*Showing for each item of expense of general control the percentage of total expenses, based on Table 16*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Board of education.		Finance offices.		Superintendent's office.		Other overhead expenses.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
41	Wilmington, Del					3.49	35	.05	1	3.54	22
42	Des Moines, Iowa	.87	8	.18	3	1.06	2	.66	13	2.77	12
43	Lawrence, Mass					1.65	13	.25	8	1.90	2
44	Tacoma, Wash			1.23	13	2.17	23	1.15	22	4.55	31
45	Kansas City, Kans	3.68	23			1.68	14	.90	16	6.26	37
46	St. Joseph, Mo	2.35	20	.23	5	1.46	9	.54	11	4.58	32
47	Troy, N. Y	.84	7	.04	1	1.50	10	.12	5	2.50	7
48	Utica, N. Y					1.79	20	1.93	24	3.72	23
49	Elizabeth, N. J	1.25	12			1.72	16			2.97	15
50	Schenectady, N. Y	.57	4			1.53	11	.25	8	2.35	5
51	Hoboken, N. J	3.03	22			1.29	6	.08	3	4.40	28
52	Manchester, N. H	.23	2			2.28	26			2.51	8
53	Evansville, Ind	.69	6	.34	6	1.76	17	.05	1	2.84	13
54	Norfolk, Va	.88	9	.16	2	1.12	5	.94	19	3.10	16
55	Wilkes-Barre, Pa			2.91	16	2.80	30	.12	5	5.83	36
56	Peoria, Ill	1.40	13	.22	4	1.10	4	2.93	25	5.65	35
57	Erie, Pa	2.77	21	4.22	18	1.93	21	.05	1	8.97	40
58	Savannah, Ga					3.62	36	.91	17	4.53	30
59	Oklahoma, Okla			1.05	11	1.65	13			2.70	10
60	Harrisburg, Pa	1.62	18	.80	10	1.12	5	1.01	21	4.45	29
61	Charleston, S. C					2.50	29			2.50	7
62	Portland, Me					1.37	8	.46	9	1.83	1
63	East St. Louis, Ill	1.86	19	1.40	14			.79	15	4.05	25
64	Holyoke, Mass					2.24	25	.51	10	2.75	11
65	Jacksonville, Fla	.38	3	2.42	15	4.00	37			6.80	38
66	Brockton, Mass					2.39	28			2.39	6
67	Bayonne, N. J	1.45	14			1.09	3	1.00	20	2.54	9
68	Johnstown, Pa			1.40	14	2.90	31			4.30	27
69	Passaic, N. J	1.51	15			1.69	15			3.20	18
70	Wichita, Kans	.99	11	.22	4	1.77	18	.92	18	3.90	24
71	Covington, Ky	1.57	16			1.78	19	1.63	23	4.98	34
72	Allentown, Pa			4.04	17	3.06	32	.20	6	7.30	39
73	Springfield, Ill					3.25	34	.06	2	3.31	20
74	Saginaw, Mich	.19	1	1.17	12	2.80	30	.67	14	4.83	33
75	Canton, Ohio	1.51	15	.46	8	2.20	24			4.17	26
	GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.										
76	Sioux City, Iowa					3.25	23			3.25	11
77	Lancaster, Pa			1.11	6	2.51	14	0.14	4	3.76	14
78	Atlantic City, N. J			.64	4	1.81	4			2.45	5
79	Little Rock, Ark			5.25	12	3.18	22	.73	13	9.16	28
80	Rockford, Ill	0.65	8			1.70	3			2.35	3
81	Bay City, Mich	.29	6	.14	2	2.10	8	1.17	17	3.70	13
82	York, Pa			1.67	8	3.63	25	.82	15	6.12	26
83	Sacramento, Cal					1.95	6			1.95	1
84	Chattanooga, Tenn	1.55	15			2.95	18	.08	3	4.58	19
85	Malden, Mass					2.43	13			2.43	4
86	Pueblo, Colo	1.13	11	.98	5	3.07	20			5.18	22
87	Haverhill, Mass					1.67	2	1.27	18	2.94	7
88	New Britain, Conn	.02	2			3.16	21	.62	10	3.80	15
89	Topeka, Kans	.71	9	.14	2	1.70	3			2.55	6
90	Davenport, Iowa	.79	10	.04	1	1.22	1	.97	16	3.02	9
91	Wheeling, W. Va	1.15	12	1.90	9	2.15	9			5.20	23
92	Chester, Pa	.04	3	3.02	11	2.24	11	.70	12	6.00	25
93	Dubuque, Iowa	1.27	13	.36	3	2.31	12	.03	1	3.97	16
94	Woonsocket, R. I					3.00	19	.51	9	3.51	12
95	Racine, Wis	.64	7			1.92	5	.47	8	3.03	10
96	Knoxville, Tenn					4.41	27			4.41	18
97	New Castle, Pa	.06	4	2.11	10	2.19	10	.04	2	4.40	17
98	Joliet, Ill	2.22	17			3.84	26	.66	11	6.72	27
99	Auburn, N. Y	1.51	14			3.51	24	.33	7	5.35	24
100	Taunton, Mass					2.01	7	.04	2	2.05	2
101	Oshkosh, Wis	.01	1			2.75	17	.23	6	2.99	8
102	Joplin, Mo	.25	5	1.38	7	2.53	15	.74	14	4.90	20
103	Newport, Ky	2.11	16			2.69	16	.20	5	5.00	21

TABLE 24.—*Showing for each item of expense of instruction, operation, and maintenance of elementary schools, including kindergartens, the percentage of total expenses; based on Table 17.*

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
	Group I: Median	57.99	6	0.92	6	2.78	7	4.56	7	2.48	7	0.495	3+	0.33	5+	1.10	7	0.25	5	0.16	3	0.59	6	4.745	6+	77.51	7
	Middle 50 per cents	53.74 to 58.61	4 to 9	.795 to 1.985	4 to 8	1.04 to 3.57	4 to 10	4.16 to 6.02	4 to 10	1.17 to 2.69	4 to 10	......	....	.16 to .46	4 to 7	.52 to 2.21	4 to 9	.17 to .505	4 to 6	......	....	.295 to 2.37	4 to 8	3.46 to 6.79	4 to 9	75.21 to 78.44	4 to 10
	Group II: Median	55.45	10+	1.09	8	2.39	10+	5.12	10+	3.035	9+	.32	4	.18	7	.62	8+	.925	6+	.08	4	.59	7+	4.065	10+	76.995	10+
	Middle 50 per cents	52.13 to 62.00	6 to 15	.64 to 4.26	5 to 11	1.77 to 3.04	6 to 15	4.75 to 6.33	6 to 14	1.95 to 3.92	6 to 14	.29 to .50	3 to 5	.13 to .31	4 to 10	.49 to 1.01	5 to 13	.57 to 1.43	4 to 9	......	....	.50 to .86	5 to 10	2.57 to 6.20	6 to 15	71.86 to 79.00	6 to 15
	Group III: Median	53.825	21+	1.73	15+	3.30	18+	5.39	20+	2.89	20	.38	7+	.295	16+	.925	20+	.43	11	.22	5	.68	17	4.30	20	76.90	21+
	Middle 50 per cents	50.63 to 58.25	12 to 30	1.24 to 3.49	8 to 23	2.04 to 4.01	9 to 28	4.795 to 6.37	12 to 30	2.09 to 3.71	11 to 30	.215 to .465	5 to 10	.155 to .475	9 to 21	.56 to 1.57	10 to 30	.26 to .60	6 to 14	.05 to .47	3 to 7	.37 to 1.28	9 to 25	3.07 to 5.77	11 to 29	73.775 to 78.81	12 to 30
	Group IV: Median	54.19	14+	2.275	11+	1.99	13+	6.045	14+	3.39	14	.32	8	.20	11	.88	14	.785	6+	.16	5	.77	10	5.05	13	75.14	14+
	Middle 50 per cents	48.90 to 55.52	8 to 21	1.14 to 3.06	4 to 17	1.19 to 3.51	8 to 20	5.26 to 6.69	8 to 21	2.055 to 4.425	8 to 20	.20 to .46	4 to 9	.10 to .40	6 to 16	.515 to 1.57	8 to 20	.59 to 1.03	4 to 9	.08 to .33	2 to 6	.425 to 1.75	6 to 14	3.34 to 6.14	8 to 17	73.13 to 79.24	8 to 21
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 AND OVER IN 1910.																										
1	Chicago, Ill	57.99	7	0.23	2	1.44	5	7.00	12	2.69	10	......	....	0.16	4	0.41	3	0.25	5	0.16	3	0.07	1	7.15	10	77.55	8
2	St. Louis, Mo	53.74	4	1.43	8	2.78	7	4.08	3	1.17	4	0.19	2	.50	8	.99	6	.12	1	.05	1	.25	2	2.80	2	68.20	1
3	Cleveland, Ohio	46.79	1	4.57	10	.71	2	6.02	10	2.48	7	......	....	.50	8	3.72	10	.13	2	......	....	.30	4	4.29	5	69.51	2
4	Baltimore, Md	58.50	9	.17	1	3.57	10	3.54	1	3.04	12	......	....	.46	7	.01	1	.15	3	......	....	.56	5	6.44	8	78.44	10
5	Detroit, Mich	58.37	8	.79	3	2.59	6	6.48	11	2.26	6	......	....	.02	2	1.10	7	2.11	10	......	....	......	....	2.29	1	76.01	5

6	Buffalo, N. Y	51.37	3	7.13	11	3.17	9	4.89	8	2.68	9	.84	5	.62	9	2.38	10	.69	9	.27	5	2.02	8	4.79	7	80.85	12
7	San Francisco, Cal	61.04	12	......	....	.44	1	7.80	13	.51	1	.72	4	.09	3	2.21	9	.19	4	......	....	1.05	7	3.46	4	77.51	7
8	Milwaukee, Wis	58.61	10	.80	4	1.04	4	4.40	6	3.01	11	.87	6	.38	6	.24	2	.68	8	.17	4	......	....	6.79	9	76.99	6
9	Newark, N. J	57.75	6	1.29	7	3.06	8	4.56	7	1.75	5	.27	3	.28	5	.52	4	.37	6	......	....	3.23	10	4.70	6	77.77	9
10	New Orleans, La	57.74	5	.88	5	4.55	12	4.16	4	.76	2	......	....	.01	1	5.66	12	......	....	......	....	2.72	9	7.72	11	84.20	13
11	Washington, D. C	50.58	2	2.54	9	3.61	11	4.27	5	3.23	13	......	....	.28	5	.81	5	.53	7	......	....	.29	3	8.44	12	74.58	3
12	Los Angeles, Cal	63.67	13	......	....	.99	3	3.95	2	.94	3	.01	1	.46	7	1.10	7	.19	4	.10	2	.59	6	3.21	3	75.21	4
13	Minneapolis, Minn	60.29	11	.92	6	5.54	13	5.52	9	2.65	8	......	....	......	....	1.48	8	......	....	......	....	3.27	11	......	....	79.67	11

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

14	Jersey City, N. J	66.38	20	1.01	6	3.04	15	4.79	7	3.03	9	......	....	0.19	8	0.53	7	1.62	11	0.02	2	0.57	6	4.60	12	85.78	20
15	Providence, R. I	49.93	3	1.05	7	2.40	11	5.29	11	4.19	16	0.50	6	.13	4	.29	1	......	....	......	....	.62	9	7.40	16	71.80	5
16	St. Paul, Minn	58.46	13	1.09	8	.27	1	10.88	19	2.95	8	.50	6	......	....	1.88	16	......	....	......	....	......	....	2.87	7	78.90	14
17	Portland, Oreg	62.40	16	......	....	1.77	6	4.30	3	1.08	2	.36	5	.34	11	.60	8	1.56	10	.01	1	......	....	6.20	15	78.62	13
18	Columbus, Ohio	43.20	1	9.63	15	2.38	10	6.29	13	2.53	7	......	....	......	....	.53	7	1.72	12	......	....	1.31	12	2.14	3	69.73	2
19	Toledo, Ohio	62.00	15	.37	4	3.16	16	3.95	1	3.60	13	......	....	.09	3	3.40	18	1.10	8	......	....	1.01	11	1.48	2	80.16	16
20	Oakland, Cal	62.86	18	......	....	1.94	9	4.34	4	.80	1	.29	3	.18	7	.64	9	.89	6	.52	7	1.59	13	4.95	13	79.00	15
21	Syracuse, N. Y	53.17	9	.20	2	2.54	12	4.83	8	5.25	18	......	....	.49	13	1.37	14	.57	4	......	....	......	....	3.44	9	71.86	6
22	New Haven, Conn	54.68	10	5.70	12	2.74	16	6.59	15	3.96	15	......	....	.31	10	1.59	15	.11	2	.35	6	.17	2	1.15	1	77.35	11
23	Birmingham, Ala	52.70	8	7.77	14	.47	2	4.23	2	1.95	6	.32	4	.03	2	.82	11	......	....	......	....	.07	1	3.00	8	71.36	3
24	Memphis, Tenn	64.25	19	2.82	11	3.27	17	6.99	17	1.90	5	.50	6	.16	6	.84	12	......	....	......	....	2.40	14	2.37	5	85.50	19
25	Scranton, Pa	52.13	6	......	....	5.44	20	6.90	16	3.55	12	.92	7	.09	3	.36	2	......	....	......	....	......	....	2.25	4	71.64	4
26	Paterson, N. J	61.46	14	.19	1	1.48	4	4.51	5	1.64	4	.21	1	.02	1	.39	3	......	....	......	....	.71	10	10.85	20	81.46	17
27	Omaha, Nebr	56.22	11	......	....	2.55	13	6.33	14	3.47	11	......	....	.13	4	.78	10	.96	7	......	....	.27	3	5.93	14	76.64	10
28	Grand Rapids, Mich	50.14	5	6.88	13	2.17	9	4.93	9	1.95	6	.21	1	.51	14	.36	2	.87	5	......	....	.45	4	7.68	17	76.15	9
29	Nashville, Tenn	62.60	17	1.94	10	1.63	5	4.75	6	1.29	3	.24	2	......	....	1.01	13	......	....	.07	3	.58	7	10.26	19	84.37	18
30	Lowell, Mass	50.01	4	......	....	2.15	8	8.86	18	3.92	14	.29	3	.43	12	.49	5	......	....	......	....	......	....	8.61	18	74.76	8
31	Cambridge, Mass	49.59	2	.23	3	1.25	3	6.23	12	4.19	16	......	....	.19	8	.44	4	1.43	9	......	....	.55	5	4.13	11	68.23	1
32	Spokane, Wash	52.54	7	.91	5	4.62	19	5.29	11	3.04	10	......	....	.14	5	2.76	17	.15	3	.08	4	......	....	2.57	6	72.10	7
33	Albany, N. Y	57.71	12	1.30	9	3.85	18	4.95	10	4.63	17	......	....	.28	9	.50	6	.03	1	.12	5	.60	8	4.00	10	77.98	12

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn	53.13	20	5.85	26	4.29	31	5.11	18	3.16	25	0.43	9	0.62	25	2.88	38	......	....	0.33	6	0.54	16	4.03	18	74.35	14
35	Trenton, N. J	59.10	34	1.24	8	3.44	23	4.64	9	2.87	18	......	....	.18	11	2.10	36	......	....	.04	2	.42	11	2.04	4	76.07	19
36	New Bedford, Mass	51.83	15	2.32	18	4.20	30	6.29	29	4.21	34	......	....	.15	8	1.12	24	0.43	11	......	....	.31	8	5.44	27	76.30	20
37	Reading, Pa	56.70	27	.56	2	3.74	27	8.41	39	3.71	30	......	....	.03	3	.88	19	.29	8	......	....	1.06	22	2.52	6	77.90	29
38	Camden, N. J	61.95	38	.11	1	5.12	33	7.04	35	2.93	22	.08	1	.10	7	.56	11	.68	16	......	....	1.92	27	3.61	13	84.10	39
39	Dallas, Tex	51.67	14	11.62	31	.96	3	4.24	7	1.74	6	......	....	......	....	.24	3	......	....	......	....	1.93	28	......	....	72.40	9
40	Springfield, Mass	45.61	4	3.76	25	3.43	22	5.37	19	4.79	37	......	....	.70	27	1.31	27	.88	17	......	....	.52	15	2.73	8	69.10	5

TABLE 24.—*Showing for each item of expense of instruction, operation, and maintenance of elementary schools, including kindergartens, the percentage of total expenses; based on Table 17*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
41	Wilmington, Del.	60.20	35			3.27	18	4.76	11	3.85	31					0.57	12	0.45	12					5.77	29	78.87	31
42	Des Moines, Iowa	52.18	16	1.39	11	2.81	15	6.00	27	2.81	17	0.41	8	0.17	10	.48	9	.56	14					4.73	22	74.54	15
43	Lawrence, Mass.	54.00	24	2.75	21	2.88	16	5.96	26	4.61	36			.61	24	1.65	31					.09	1	4.65	21	77.20	26
44	Tacoma, Wash	50.36	11	6.40	27	3.18	17	4.91	13	2.21	14	.41	8	.02	2	1.21	26	.03	2			.96	21	1.31	1	71.00	7
45	Kansas City, Kans.	53.90	23			1.56	7	5.09	17	2.89	20	.45	10	.06	6	.62	13	.26	6			.20	5	3.67	14	68.70	4
46	St. Joseph, Mo.	57.36	29	1.52	14	1.25	4	9.66	40	3.37	26			.35	19	.05	1	.44	11	.22	5			2.95	10	77.17	25
47	Troy, N. Y	46.80	5	2.04	17	2.14	11	5.40	21	4.60	35			.30	17	.94	21	.02	1	.80	9	1.56	26	9.71	35	74.31	13
48	Utica, N. Y.	58.30	31			1.85	8	6.50	32	5.25	38			.82	29	1.67	32	.05	3	.05	3	.11	2	2.53	7	77.13	23
49	Elizabeth, N. J.	53.90	23	1.27	9	5.89	35	5.38	20	2.48	15	.27	6	.84	30	.52	10			.05	3	3.25	32	1.75	3	75.60	17
50	Schenectady, N. Y	58.65	32	2.95	22	2.04	9	3.76	4	3.96	32			.77	28	.45	8	.28	7	.42	7			5.77	29	79.05	32
51	Hoboken, N. J.	60.35	36			3.56	25	4.08	6	1.62	4	.35	7	.29	16	1.00	23					.37	9	8.23	33	79.85	36
52	Manchester, N. H.	58.90	33			2.62	13	3.97	5	6.56	40	.73	13	.43	21	.82	18	.38	9			.79	19	4.30	20	79.50	34
53	Evansville, Ind.	50.90	12	8.59	29	1.51	6	6.43	31	2.21	14			.05	5	1.70	33					.19	4	5.12	25	76.70	21
54	Norfolk, Va	67.08	40			1.50	5	8.06	38	1.98	9			.33	18	.75	16	.43	10			1.10	23	3.77	16	85.00	40
55	Wilkes-Barre, Pa.	55.30	26	.99	5	6.40	37	5.69	25	3.45	28	.23	5	.24	13	.69	15					6.77	33			79.76	35
56	Peoria, Ill.	63.61	39	2.44	19	1.25	4	5.58	24	2.07	10			.26	14	.14	2	1.46	19					4.24	19	81.05	38
57	Erie, Pa.	45.10	2	7.23	28	3.72	26	6.31	30	3.49	29			.69	26	.42	6	.09	4			.41	10	2.08	5	69.54	6
58	Savannah, Ga.	72.29	41					3.26	3	1.27	2					.43	7							1.50	2	78.75	30
59	Oklahoma, Okla.	53.80	21	2.65	20	3.33	19	4.69	10	1.68	5											3.08	31	4.87	23	74.10	12
60	Harrisburg, Pa.	48.19	7	1.10	6	6.65	38	6.92	34	2.88	19	.10	2	.35	19	.29	5					2.24	30	3.91	17	72.63	10
61	Charleston, S. C.	45.51	3			.26	2	1.28	1							8.88	40							3.07	11	58.50	1
62	Portland, Me.	52.70	19	1.67	15	3.46	24	7.25	36	4.09	33	.08	1	.41	20	.91	20	.50	13	.21	4	.43	12	5.49	28	77.20	26
63	East St. Louis, Ill.	47.10	6	11.35	30	2.35	12	10.40	41	1.78	8	.88	14	.16	9	.77	17	.64	15	.52	8	.68	17	3.60	12	80.23	37
64	Holyoke, Mass.	50.23	10	1.41	13	3.36	21	4.40	8	3.38	27	.55	12	.52	22	.99	22					.74	18	7.87	32	73.45	11
65	Jacksonville, Fla.	52.20	17					2.80	2	.73	1					1.95	35	.15	5			2.02	29	5.05	24	64.90	2

66	Brockton, Mass	49.46	8	1.18	7	4.55	32	5.09	17	5.46	39	.19	3	.27	15	1.35	28	...	...	...	...	...	...	3.68	15	71.23	8
67	Bayonne, N. J	61.26	37	.82	3	5.14	34	4.92	14	2.09	11	...	...	...	...	2.71	37	.26	6	...	...	1.22	24	6.97	31	85.39	41
68	Johnstown, Pa	49.50	9	1.31	10	3.34	20	6.74	33	2.18	13	.88	14	.05	5	...	...	...	...	...	...	...	...	13.10	38	77.10	22
69	Passaic, N. J	57.15	28	...	...	4.02	29	4.98	15	3.14	24	.20	4	.60	23	1.41	29	...	...	.08	1	.29	7	5.33	26	77.15	24
70	Wichita, Kans	52.50	18	1.24	8	2.05	10	5.08	16	2.11	12	...	...	...	...	8.21	39	...	...	...	...	1.28	25	10.40	37	77.87	28
71	Covington, Ky	58.20	30	8.73	24	.12	1	5.43	22	1.30	3	.23	5	.35	19	1.14	25	...	...	...	...	.24	6	8.66	34	79.40	33
72	Allentown, Pa	51.25	13	.95	4	4.01	28	6.14	28	2.96	23	...	...	.20	12	1.79	34	...	...	...	...	.50	14	10.00	36	77.80	27
73	Springfield, Ill	53.85	22	3.49	23	.26	2	4.83	12	1.75	7	...	...	.04	4	1.57	30	2.43	20	...	...	.91	20	6.58	30	75.71	18
74	Saginaw, Mich	42.80	1	1.79	16	2.73	14	5.57	23	2.90	21	.48	11	.33	18	.68	14	1.31	18	1.58	10	.47	13	4.30	20	64.94	8
75	Canton, Ohio	54.03	25	1.40	12	6.39	36	7.41	37	2.73	16	...	...	.01	1	.25	4	...	...	...	...	.17	3	2.81	9	75.20	16

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

76	Sioux City, Iowa	58.10	25	0.85	2	0.58	4	7.05	25	4.86	22	0.41	9	0.06	3	1.63	21	...	...	...	...	...	...	6.11	17	79.65	23
77	Lancaster, Pa	48.35	6	...	...	3.51	20	7.16	26	3.39	14	.38	8	.10	6	2.67	24	...	...	...	...	2.60	16	5.05	13	73.21	9
78	Atlantic City, N. J	47.44	4	...	...	5.83	26	4.32	5	4.98	23	1.62	13	...	...	8.93	26	...	...	...	...	...	...	5.98	16	79.10	20
79	Little Rock, Ark	56.40	22	2.56	14	1.98	13	4.06	3	2.56	9	.77	12	.38	15	.78	11	...	...	...	...	1.67	14	2.32	5	73.48	10
80	Rockford, Ill	48.90	8	2.99	15	.39	1	6.69	21	4.26	20	...	...	.20	11	2.37	23	1.10	10	...	...	...	...	6.23	19	73.13	8
81	Bay City, Mich	48.28	5	6.64	21	2.82	18	6.10	15	2.58	10	.38	8	.14	8	.80	13	...	...	...	...	.21	2	5.05	13	73.00	7
82	York, Pa	53.40	13	1.26	7	5.50	25	6.81	23	3.63	16	.52	11	.25	12	...	...	...	...	...	...	.58	9	5.05	13	77.00	19
83	Sacramento, Cal	59.55	27	1.14	6	1.75	12	5.28	9	.72	1	...	...	.29	14	.88	14	.59	4	0.50	7	.77	10	2.83	7	74.30	12
84	Chattanooga, Tenn	65.10	28	...	...	1.88	10	3.90	1	1.99	7	.32	7	.08	5	1.51	20	...	...	...	...	...	...	6.17	18	80.45	24
85	Malden, Mass	50.85	9	1.03	4	3.36	19	5.26	8	5.09	24	...	...	.18	10	.24	2	...	...	...	...	.30	4	4.07	10	70.38	3
86	Pueblo, Colo	54.38	16	4.20	18	2.40	16	6.30	19	2.12	8	.20	4	.40	16	.60	9	...	...	...	...	1.20	13	2.40	6	74.20	11
87	Haverhill, Mass	54.03	14	1.03	4	3.57	21	5.97	13	4.19	19	...	...	.16	9	.32	4	.28	3	...	...	.51	7	5.12	14	75.18	15
88	New Britain, Conn	46.02	2	1.38	8	7.05	27	5.19	7	4.86	22	...	...	1.28	21	.27	3	...	...	.33	6	...	...	1.72	3	68.10	1
89	Topeka, Kans	56.70	23	.86	3	1.53	11	6.22	16	2.68	13	.05	2	.40	16	.42	6	.88	8	.11	3	.38	5	4.21	11	74.44	13
90	Davenport, Iowa	39.90	1	9.91	23	.44	2	4.23	4	1.81	5	...	...	.02	1	.38	5	.72	6	.08	2	3.44	17	10.60	24	71.53	4
91	Wheeling, W. Va	55.52	21	9.62	22	.72	5	4.02	2	2.62	12	...	...	.62	19	1.32	19	.62	5	...	...	.90	11	7.64	23	83.60	28
92	Chester, Pa	55.40	20	...	...	4.19	22	7.81	27	...	...	...	...	...	...	14.60	27	...	...	...	...	...	...	...	...	82.60	27
93	Dubuque, Iowa	53.30	12	4.35	19	.56	3	6.26	17	4.00	18	.06	3	.07	4	.21	1	1.10	10	.06	1	.28	3	6.46	21	76.71	18
94	Woonsocket, R. I	52.06	11	2.40	13	4.54	23	6.53	20	6.97	26	.51	10	.13	7	.94	15	.10	2	.17	5	.98	12	5.67	15	81.00	26
95	Racine, Wis	57.74	24	3.06	17	.93	7	5.88	12	2.59	11	...	...	.51	17	.66	10	1.58	11	.16	4	.47	6	1.52	2	75.10	14
96	Knoxville, Tenn	59.10	26	.84	1	.89	6	5.77	10	1.25	2	.29	6	.04	2	.79	12	...	...	...	...	3.58	18	3.85	8	76.40	17
97	New Castle, Pa	54.35	15	2.28	12	5.00	24	7.01	24	1.94	6	.01	1	.54	18	2.01	22	...	...	...	...	.04	1	6.39	20	79.57	22
98	Joliet, Ill	47.41	3	2.10	10	2.35	15	7.82	28	3.60	15	...	...	.28	13	1.05	16	...	...	...	...	.57	8	4.32	12	69.50	2
99	Auburn, N. Y	54.90	18	2.27	11	1.75	12	5.81	11	4.59	21	.25	5	.18	10	.47	7	1.03	9	.08	2	...	...	1.32	1	72.65	6
100	Taunton, Mass	54.95	19	1.64	9	2.63	17	5.99	14	6.86	25	.20	4	.07	4	2.79	25	.09	1	...	...	...	...	4.02	9	79.24	21
101	Oshkosh, Wis	48.75	7	5.84	20	1.19	8	6.29	18	3.73	17	...	...	.76	20	.56	8	.85	7	.80	8	1.83	15	1.86	4	72.46	5
102	Joplin, Mo	50.90	10	1.04	5	2.00	14	4.50	6	1.74	4	...	...	...	...	1.12	18	...	...	...	...	19.40	19	...	...	80.70	25
103	Newport, Ky	54.80	17	3.05	16	1.25	9	6.72	22	1.55	3	...	...	.25	12	1.11	17	...	...	...	...	...	...	7.07	22	75.80	16

TABLE 25.—*Showing for each item of expense of instruction, operation, and maintenance of secondary schools the percentage of total expenses; based on Table 18.*

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Textbooks, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual-training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Percentage.	Rank.	Percentage	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
	Group I: Median	10.46	7	0.37	4+	0.37	6	0.83	7	0.29	7	0.07	2	0.10	5+	0.15	6	0.19	5	0.175	2+	0.07	5	0.585	6+	14.21	7
	Middle, 50 per cents	8.65 to 13.50	4 to 10	.32 to .78	3 to 6	.33 to .70	4 to 9	.69 to 1.02	4 to 10	.24 to .41	4 to 9	......	....	.05 to .13	3 to 7	.07 to .34	3 to 9	.15 to .33	3 to 7	......	....	.035 to .195	3 to 7	.36 to .78	4 to 9	12.10 to 17.40	4 to 10
	Group II: Median	13.23	10	1.116	3+	.74	8+	1.03	9	.52	10	.07	3+	.17	6	.21	8+	.33	7+	.17	5	.095	5+	.535	9+	16.93	10+
	Middle, 50 per cents	10.51 to 14.585	6 to 14	......	....	.125 to 1.00	4 to 11	.74 to 1.40	5 to 13	.395 to .68	6 to 13	.05 to .085	3 to 4	.05 to .23	3 to 8	.11 to .33	5 to 13	.13 to 1.015	5 to 9	.08 to .25	3 to 7	.035 to .175	3 to 8	.36 to .665	6 to 13	13.66 to 18.60	6 to 15
	Group III: Median	11.37	21+	.89	10+	.925	18+	.86	19	.40	14	.08	6	.09	7	.20	13	.495	10+	.15	5	.165	9+	.64	15+	15.51	21+
	Middle, 50 per cents	9.95 to 13.88	12 to 31	.33 to 1.24	6 to 15	.47 to 1.50	10 to 26	.59 to 1.22	9 to 27	.21 to .64	6 to 21	.045 to .13	4 to 7	.06 to .15	5 to 10	.085 to .41	5 to 19	.35 to .89	6 to 15	.08 to .25	3 to 7	.06 to .305	5 to 14	.33 to .905	8 to 22	13.045 to 18.97	13 to 31
	Group IV: Median	12.125	12+	1.005	6+	.51	12	1.11	13	.63	13	.05	4	.13	7	.20	11	.22	6	.10	4	.12	5	.575	9+	16.565	14+
	Middle, 50 per cents	10.40 to 14.15	8 to 19	.31 to 1.56	4 to 9	.28 to .99	7 to 17	.83 to 1.37	7 to 19	.34 to .835	7 to 18	.04 to .08	3 to 5	.04 to .31	3 to 13	.155 to .43	7 to 15	.115 to .58	4 to 8	.03 to .27	2 to 6	.06 to .30	3 to 8	.39 to 1.115	6 to 14	14.23 to 19.03	8 to 21
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.																										
1	Chicago, Ill	8.65	4	0.25	2	0.51	7	0.73	5	0.29	7	......	....	0.07	4	0.07	3	0.15	3	......	....	0.01	1	0.80	10	11.30	3
2	St. Louis, Mo	10.96	8	......	....	.96	10	1.39	12	.36	8	0.01	1	.08	5	.27	8	.15	3	......	....	.03	2	.34	3	14.55	8
3	Cleveland, Ohio	11.90	9	1.13	7	.19	2	1.05	11	.36	8	......	....	.13	7	.11	4	.19	5	......	....	.08	6	.44	5	15.58	9
4	Baltimore, Md	10.40	6	.23	1	1.40	12	.94	9	.26	5	......	....	.05	3	.01	1	.18	4	......	....	.04	3	.70	8	14.21	7
5	Detroit, Mich	13.50	10	......	....	.67	8	1.60	13	.53	10	......	....	.01	1	.73	12	......	....	......	....	......	....	.36	4	17.40	10

6	Buffalo, N. Y.	8.25	3	.78	6	.70	9	.77	6	.27	6	.07	2	.20	9	.37	10	.29	7	0.09	1	.01	1	.63	7	12.43	5
7	San Francisco, Cal.	10.46	7	......	....	.04	1	.54	3	.07	2	.09	3	.02	2	.23	7	.04	1	......	....	.07	5	.54	6	12.10	4
8	Milwaukee, Wis.	9.64	5	.40	5	.36	5	.86	8	.61	12	.07	2	.14	8	.15	6	.38	8	.16	2	......	....	.78	9	13.55	6
9	Newark, N. J.	6.29	2	......	....	.37	6	.38	2	.08	3	.01	1	.12	6	.06	2	.11	2	......	....	.23	9	.33	2	7.98	2
10	New Orleans, La.	5.86	1	.34	4	.36	5	.29	1	.05	1	......	....	.01	1	.64	11	......	....	......	....	.04	3	.25	1	7.83	1
11	Washington, D. C.	14.11	12	1.18	8	.33	4	.69	4	.41	9	......	....	.14	8	.13	5	.52	10	.23	4	.20	8	.86	11	18.80	12
12	Los Angeles, Cal.	16.39	13	......	....	.21	3	.83	7	.24	4	......	....	.12	6	.34	9	.46	9	.19	3	.19	7	.93	12	19.90	13
13	Minneapolis, Minn.	14.01	11	.32	3	1.32	11	1.02	10	.55	11	......	....	......	....	.07	3	.20	6	......	....	.91	10	......	....	18.40	11

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

4	Jersey City, N. J.	6.72	1	......	....	0.25	6	0.86	6	0.43	7	......	....	0.02	1	0.07	4	0.19	6	......	....	......	....	0.15	3	8.69	2
15	Providence, R. I.	13.23	10	0.15	1	1.58	14	1.23	12	.85	16	0.06	3	.08	4	.11	5	......	....	0.08	3	0.18	9	1.05	17	18.60	15
16	St. Paul, Minn.	14.10	12	......	....	......	....	1.92	17	.52	10	.09	5	......	....	.42	15	......	....	1.06	9	......	....	.57	10	18.68	16
17	Portland, Oreg.	9.69	5	......	....	.45	7	.56	2	.29	4	.04	2	.04	2	.14	6	.38	8	......	....	......	....	.77	16	12.36	5
18	Columbus, Ohio.	18.70	19	1.69	6	.10	4	1.40	13	.89	17	......	....	......	....	.11	5	......	....	1.59	10	.17	8	.35	5	25.00	20
19	Toledo, Ohio.	12.33	8	.24	2	.76	9	.56	2	.52	10	......	....	.18	7	.36	14	1.08	10	......	....	.03	2	......	....	16.06	7
20	Oakland, Cal.	14.13	13	......	....	.05	1	.75	5	.16	2	.08	4	.06	3	.29	11	.27	7	.07	2	.39	12	.47	8	16.72	9
21	Syracuse, N. Y.	14.73	15	......	....	.09	3	1.63	14	.50	9	......	....	.23	8	.58	17	.02	1	......	....	......	....	.43	7	18.21	13
22	New Haven, Conn.	11.33	6	1.03	3	.85	10	1.40	13	.64	12	......	....	.16	5	.24	10	.16	5	.05	1	.03	2	.18	4	16.07	8
23	Birmingham, Ala.	14.44	14	1.30	4	.10	4	1.89	16	.82	15	.15	6	.50	11	.22	9	1.43	11	.17	5	.04	3	.37	6	21.43	17
24	Memphis, Tenn.	6.78	2	......	....	.07	2	.57	3	.10	1	.04	2	......	....	.20	8	......	....	.08	3	.06	4	......	....	7.90	1
25	Scranton, Pa.	15.53	16	......	....	.76	9	1.00	8	.18	3	.09	5	.02	1	.18	7	......	....	......	....	......	....	.68	14	18.44	14
26	Paterson, N. J.	......	....	......	....	......	....	......	....	......	....	......	....	......	....	.02	1	10.70	12	.63	8	.38	11	.07	2	11.80	4
27	Omaha, Nebr.	13.33	11	......	....	1.06	12	.95	7	.49	8	......	....	.02	1	.51	16	.19	6	......	....	.15	7	.50	9	17.20	12
28	Grand Rapids, Mich.	12.42	9	1.50	5	.72	8	1.03	9	.39	5	.08	4	.17	6	.06	3	.03	2	.11	4	.02	1	.60	11	17.13	11
29	Nashville, Tenn.	8.71	3	......	....	.15	4	.39	1	.40	6	.02	1	......	....	.07	4	......	....	......	....	.03	2	.05	1	9.82	3
30	Lowell, Mass.	9.46	4	......	....	1.00	11	1.17	11	.67	13	.06	3	.45	10	.04	2	.07	3	......	....	.09	5	.65	13	13.66	6
31	Cambridge, Mass.	16.15	18	......	....	1.00	11	1.85	15	1.32	18	......	....	.17	6	.31	12	.95	9	......	....	.37	10	1.70	18	23.82	19
32	Spokane, Wash.	15.66	17	......	....	1.72	15	1.07	10	.69	14	......	....	.23	8	.78	18	1.08	10	.20	6	......	....	.61	12	22.04	18
33	Albany, N. Y.	12.07	7	......	....	1.40	13	.73	4	.56	11	......	....	.42	9	.33	13	.10	4	.25	7	.10	6	.70	15	16.73	10

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn.	11.40	22	0.75	8	1.12	23	0.90	20	0.86	26	0.15	8	0.09	7	0.73	24	......	....	......	....	0.10	7	0.36	10	16.46	23
35	Trenton, N. J.	9.34	9	......	....	.80	17	.59	9	.24	7	......	....	.08	6	.16	10	2.00	20	......	....	.09	6	.28	5	13.58	13
36	New Bedford, Mass.	7.63	4	.06	2	.69	14	.67	12	.37	12	......	....	.04	3	.13	9	......	....	......	....	.03	3	.16	2	9.78	2
37	Reading, Pa.	11.34	21	......	....	1.91	30	1.37	29	.40	14	......	....	.10	8	.38	18	......	....	......	....	.17	10	.17	3	15.84	22
38	Camden, N. J.	5.79	1	.11	3	.47	10	1.09	24	.15	3	......	....	.08	6	.13	9	.75	14	......	....	.20	11	2.13	32	10.90	5
39	Dallas, Tex.	16.77	40	1.25	16	.32	8	1.78	33	.58	19	......	....	......	....	.12	8	.72	13	.70	9	.06	5	......	....	22.30	36
40	Springfield, Mass.	14.52	34	1.64	19	1.55	27	2.04	36	.97	28	......	....	.45	15	.88	26	.37	8	......	....	.06	5	.67	17	23.15	39

TABLE 25.—*Showing for each item of expense of instruction, operation, and maintenance of secondary schools the percentage of total expenses; based on Table 18*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual-training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
41	Wilmington, Del.	12.78	28	......	....	1.25	24	.95	21	.40	14	......	....	......	....	.26	14	......	....	......	....	......	....	.93	23	16.57	24
42	Des Moines, Iowa	12.34	27	1.45	18	.39	9	1.46	30	.89	27	.08	6	.11	9	.04	2	.65	12	......	....	......	....	1.87	30	19.28	33
43	Lawrence, Mass	10.10	13	......	....	.85	18	.45	4	.53	18	......	....	.36	12	.03	1	......	....	......	....	......	....	.11	1	12.43	9
44	Tacoma, Wash	16.02	38	1.12	13	1.00	19	1.12	25	.64	21	.05	4	.04	3	.51	22	.93	17	.17	6	.68	20	.22	4	22.50	37
45	Kansas City, Kans	17.40	41	......	....	.78	16	1.98	35	.73	25	.18	9	.48	16	.48	21	1.04	18	.08	3	.24	13	.61	14	24.00	40
46	St. Joseph, Mo	13.98	32	.12	4	.22	5	1.22	27	.36	11	......	....	.41	14	......	....	.29	5	.03	1	......	....	.33	8	16.96	26
47	Troy, N. Y	10.60	15	.33	6	.08	2	1.08	23	.50	17	......	....	.17	11	.20	13	.14	2	......	....	.45	17	1.29	28	14.84	18
48	Utica, N. Y	10.95	18	......	....	.50	11	1.49	31	.19	5	......	....	.08	6	.17	11	......	....	......	....	.01	1	1.07	24	14.46	16
49	Elizabeth, N. J	9.48	10	......	....	1.00	19	.84	17	.31	9	.05	4	......	....	.09	5	......	....	......	....	.32	15	.61	14	12.70	10
50	Schenectady, N. Y	12.00	26	......	....	......	....	.59	9	.50	17	......	....	.38	13	.11	7	.45	10	.15	5	......	....	.67	17	14.85	19
51	Hoboken, N. J	7.50	3	......	....	1.07	21	.66	11	.21	6	......	....	.02	2	.08	4	.39	9	......	....	.05	4	.72	19	10.70	4
52	Manchester, N. H	10.51	14	......	....	1.50	26	.86	19	.71	24	.11	7	.15	10	.19	12	......	....	......	....	.29	14	.48	11	14.80	17
53	Evansville, Ind	15.70	36	.77	9	......	....	1.17	26	.24	7	......	....	.01	1	.31	16	.21	4	......	....	.02	2	.51	12	18.94	31
54	Norfolk, Va.	9.04	8	......	....	.23	6	.56	7	.13	1	......	....	.02	2	.07	3	......	....	......	....	......	....	......	....	10.05	3
55	Wilkes-Barre, Pa.	10.66	16	.03	1	.52	12	......	....	.14	2	.01	1	.06	5	.20	13	.36	7	......	....	.54	18	.65	16	13.17	12
56	Peoria, Ill	8.44	5	.92	11	.12	3	.58	8	.39	13	......	....	.04	3	.03	1	.16	3	......	....	......	....	.32	7	11.00	6
57	Erie, Pa.	10.00	12	2.39	20	2.09	33	1.17	26	.67	23	......	....	.17	11	.79	25	......	....	......	....	.09	6	.16	2	17.53	28
58	Savannah, Ga	11.75	25	1.20	14	......	....	.65	10	.14	2	......	....	.06	5	.04	2	.54	11	......	....	......	....	......	....	14.38	15
59	Oklahoma, Okla.	16.03	39	......	....	1.33	25	.53	6	.19	5	......	....	......	....	......	....	......	....	......	....	.37	16	.55	13	19.00	32
60	Harrisburg, Pa	14.09	33	......	....	1.57	28	1.28	28	.67	23	.01	1	.15	10	.03	1	.89	15	......	....	.16	9	.88	22	19.73	35
61	Charleston, S. C	11.02	19	......	....	......	....	.25	1	......	....	......	....	......	....	2.01	29	......	....	......	....	......	....	.72	19	14.00	14
62	Portland, Me	12.90	29	......	....	1.58	29	1.03	22	.62	20	......	....	.06	5	.10	6	......	....	......	....	......	....	1.19	26	17.48	27
63	East St. Louis, Ill	8.51	6	.86	10	.16	4	.79	15	.33	10	.18	9	.09	7	.07	3	......	....	.04	2	.15	8	.22	4	11.40	7
64	Holyoke, Mass	11.63	24	.32	5	1.05	20	1.74	32	1.46	29	.08	6	.64	17	.40	19	......	....	......	....	.23	12	.77	20	18.33	30
65	Jacksonville, Fla	15.50	35	......	....	......	....	.44	3	.24	7	......	....	......	....	.64	23	......	....	......	....	.68	20	2.10	31	19.60	34

66	Brockton, Mass	16.00	37	......	....	2.41	34	1.86	34	.65	22	.11	7	.06	5	.92	27	.35	6	.11	4	......	....	.63	15	28.10	38
67	Bayonne, N. J	6.37	2	......	....	.66	13	.43	2	.17	4	......	....			.42	20	......	....	......	....	......	....	.35	9	8.40	1
68	Johnstown, Pa	11.28	20	1.24	15	2.90	36	.80	16	.14	2	.04	3	......	....	......	....	......	....	......	....	......	....	1.20	27	17.60	29
69	Passaic, N. J	10.90	17	......	....	2.03	32	.50	5	.21	6	.03	2	.09	7	.03	1	1.24	19	......	....	......	....	......	....	15.03	20
70	Wichita, Kans	11.50	23	1.39	17	.26	7	.85	18	.47	16	......	....	......	....	.38	18	......	....	......	....	......	....	.33	8	15.18	21
71	Covington, Ky	8.60	7	......	....	......	....	.71	13	.19	5	.07	5	.11	9	.34	17	......	....	......	....	.06	5	1.69	29	11.77	8
72	Allentown, Pa	9.90	11	......	....	1.09	22	.44	3	.62	20	......	....	......	....	.31	16	......	....	.25	7	......	....	.31	6	12.92	11
73	Springfield, Ill	13.05	30	......	....	.04	1	.75	14	.30	8	......	....	.05	4	.98	28	.08	1	......	....	.57	19	1.12	25	16.94	25
74	Saginaw, Mich	19.60	42	.37	7	.72	15	2.46	37	.97	28	.18	9	.09	7	.29	15	.92	16	.27	8	.17	10	.83	21	26.87	41
75	Canton, Ohio	13.78	31	.97	12	2.63	35	1.03	22	.41	15	......	....	.01	1	.03	1	......	....	......	....	.03	3	.71	18	19.60	34

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

76	Sioux City, Iowa	10.31	7	......	....	0.83	16	1.46	20	0.64	14	0.08	5	0.07	6	0.24	12	......	....	......	....	......	....	0.55	9	14.18	7
77	Lancaster, Pa	12.15	13	......	....	1.09	19	1.37	19	1.09	20	.05	4	......	....	.36	15	......	....	......	....	0.73	11	2.19	19	19.03	21
78	Atlantic City, N. J	12.27	14	......	....	.66	14	1.11	13	.83	18	.28	7	......	....	1.00	22	......	....	......	....	......	....	......	....	16.15	12
79	Little Rock, Ark	11.99	11	......	....	.34	8	1.13	14	.61	12	.08	5	.06	5	.15	6	......	....	......	....	.12	5	.47	8	14.95	11
80	Rockford, Ill	15.60	23	......	....	.15	5	3.03	25	1.58	24	......	....	.55	18	.56	18	0.42	8	......	....	.06	3	2.01	18	23.96	28
81	Bay City, Mich	15.50	22	1.90	10	.68	15	1.02	11	.57	10	.05	4	.03	2	.18	9	......	....	......	....	.02	1	1.10	14	21.05	24
82	York, Pa	10.40	8	.31	4	1.52	22	1.11	13	.59	11	.11	6	.39	16	......	....	......	....	......	....	.07	4	.15	1	14.65	10
83	Sacramento, Cal	11.60	9	1.36	7	1.11	20	1.25	17	.10	1	......	....	.06	5	.50	16	.11	8	......	....	.20	6	.39	6	16.68	15
84	Chattanooga, Tenn	12.48	15	......	....	.37	11	.52	3	.29	5	.04	3	.01	1	.19	10	......	....	......	....	......	....	......	....	13.90	6
85	Malden, Mass	16.94	25	.46	5	2.31	24	1.62	21	1.96	25	......	....	.37	14	.15	6	......	....	......	....	......	....	......	....	23.81	27
86	Pueblo, Colo	14.78	20	......	....	.53	13	1.69	22	.38	7	......	....	.03	2	.12	5	......	....	.02	1	.25	7	.70	11	18.50	19
87	Haverhill, Mass	12.55	16	.30	3	1.39	21	.48	2	.63	13	......	....	.38	15	.02	1	.22	6	......	....	......	....	.46	7	16.43	13
88	New Britain, Conn	8.96	3	2.28	11	.36	10	1.17	15	.79	16	......	....	.15	8	.26	13	......	....	.18	6	......	....	.39	6	14.54	9
89	Topeka, Kans	16.81	24	......	....	.11	3	1.32	18	1.37	22	.05	4	.44	17	.06	2	......	....	.02	1	......	....	1.36	17	21.54	25
90	Davenport, Iowa	12.10	12	3.23	12	.11	3	2.74	24	.82	17	......	....	.16	9	.20	11	.74	9	.08	3	.34	9	......	....	20.52	22
91	Wheeling, W. Va	7.30	1	.65	6	.31	7	.32	1	.19	3	......	....	.03	2	.66	19	......	....	......	....	.12	5	.22	2	9.80	1
92	Chester, Pa	9.30	5	......	....	......	....	1.23	16	......	....	......	....	......	....	.97	21	......	....	......	....	......	....	......	....	11.50	3
93	Dubuque, Iowa	12.80	17	1.56	9	.05	2	.97	10	.54	9	.73	8	.31	13	.26	13	.12	4	.36	7	.12	5	.27	4	18.09	17
94	Woonsocket, R. I	8.65	2	.05	1	.35	9	.57	5	.30	6	.03	2	.03	2	.10	4	......	....	.10	4	.02	1	.30	5	10.50	2
95	Racine, Wis	11.80	10	1.54	8	.66	14	.96	9	.70	15	......	....	.26	12	.20	11	1.17	10	.41	9	.30	8	.60	10	18.60	20
96	Knoxville, Tenn	13.41	18	......	....	.25	6	.83	7	.29	5	.04	3	.04	3	.17	8	......	....	......	....	.80	12	1.30	16	17.13	16
97	New Castle, Pa	10.40	8	......	....	2.02	23	.56	4	.16	2	.01	1	.13	7	.54	17	......	....	......	....	.02	1	.39	6	14.23	8
98	Joliet, Ill	18.22	26	......	....	.31	7	1.90	23	.83	18	......	....	.25	11	.08	3	.07	2	.15	5	.03	2	.26	3	22.10	26
99	Auburn, N. Y	15.05	21	......	....	.12	4	.67	6	.84	19	.08	5	.17	10	.16	7	.15	5	.02	1	......	....	1.13	15	18.39	18
100	Taunton, Mass	9.06	4	.18	2	.51	12	.93	8	1.38	23	.04	3	.01	1	.69	20	.05	1	......	....	......	....	.71	12	13.56	5
101	Oshkosh, Wis	14.15	19	......	....	.98	17	1.46	20	1.17	21	......	....	.39	16	.19	10	.38	7	.38	8	.69	10	.95	13	20.74	23
102	Joplin, Mo	9.85	6	......	....	1.00	18	.67	6	.48	8	......	....	.04	3	.17	8	1.25	11	.04	2	......	....	......	....	13.50	4
103	Newport, Ky	11.80	10	......	....	.02	1	1.04	12	.25	4	......	....	.05	4	.29	14	......	....	......	....	......	....	3.00	20	16.45	14

TABLE 26.—*Showing for total amounts expended for instruction, operation, and maintenance of normal, evening, vacation, and special schools the percentage of total expenses; based on Table 19.*

	Cities.	Normal schools.		Evening schools.		Vacation schools.		Special schools.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
	Group I: Median	1.87	4	1.45	7	0.235	3+	0.665	3+	3.54	7
	Middle, 50 per cents			1.10 to 1.68	4 to 10	.18 to .50	3 to 5			2.67 to 4.86	4 to 10
	Group II: Median			1.52	9	.27	3+	1.32	1+	1.71	9+
	Middle, 50 per cents			.86 to 2.20	5 to 13					.77 to 2.71	5 to 14
	Group III: Median	1.15	4	.975	15+	.67	2	2.05	1+	1.31	17
	Middle, 50 per cents			.615 to 1.905	9 to 23					.665 to 2.315	10 to 25
	Group IV: Median			1.185	7+			.775	2+	1.685	7+
	Middle, 50 per cents			.57 to 2.13	5 to 10					.79 to 2.335	5 to 10
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR MORE IN 1910.										
1	Chicago, Ill	1.21	3	1.68	10	0.16	2	0.49	2	3.54	7
2	St. Louis, Mo	2.05	5	1.10	4	.18	3	1.60	5	4.93	11
3	Cleveland, Ohio	2.52	7	1.12	5	.50	5	.42	1	4.56	9
4	Baltimore, Md			1.16	6					1.16	3
5	Detroit, Mich			1.51	8	.63	6	.55	3	2.71	5
6	Buffalo, N. Y	.24	1	2.14	11	.29	4			2.67	4
7	San Francisco, Cal			4.21	12			.78	4	4.99	12
8	Milwaukee, Wis			1.45	7	.18	3	3.23	6	4.86	10
9	Newark, N. J	.80	2	6.42	13	1.49	7			8.71	13
10	New Orleans, La	2.25	6	1.65	9					3.90	8
11	Washington, D. C	1.87	4	1.04	3					2.91	6
12	Los Angeles, Cal			.64	2					.64	2
13	Minneapolis, Minn			.16	1	.08	1			.24	1
	GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.										
14	Jersey City, N. J			1.70	11	0.13	2			1.83	11
15	Providence, R. I			4.10	16					4.10	17
16	St. Paul, Minn					.26	3			.26	1
17	Portland, Oreg			.66	3			1.86	2	2.52	13
18	Columbus, Ohio	.42	1	.10	1					.52	3
19	Toledo, Ohio										
20	Oakland, Cal			1.74	12					1.74	10
21	Syracuse, N. Y			1.03	7	.06	1			1.09	7
22	New Haven, Conn			1.31	8	.37	6			1.68	9
23	Birmingham, Ala										
24	Memphis, Tenn			.68	4					.68	4
25	Scranton, Pa			2.20	13					2.20	12
26	Paterson, N. J			1.52	9					1.52	8
27	Omaha, Nebr			1.01	6					1.01	6
28	Grand Rapids, Mich			1.60	10	.28	4	.78	1	2.66	14
29	Nashville, Tenn			.86	5					.86	5
30	Lowell, Mass			5.54	17					5.54	18
31	Cambridge, Mass			3.13	15	.34	5			3.47	16
32	Spokane, Wash			.28	2					.28	2
33	Albany, N. Y			2.76	14					2.76	15
	GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.										
34	Hartford, Conn			3.70	30	0.79	3			4.49	30
35	Trenton, N. J			1.54	20			3.34	2	4.88	32
36	New Bedford, Mass	4.12	7	2.05	24					6.17	34
37	Reading, Pa			1.81	22					1.81	21
38	Camden, N. J			.65	11					.65	3

TABLE 26.—*Showing for total amounts expended for instruction, operation, and maintenance of normal, evening, vacation, and special schools the percentage of total expenses; based on Table 19*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Normal schools.		Evening schools.		Vacation schools.		Special schools.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
39	Dallas, Tex			.80	14					.80	12
40	Springfield, Mass			2.62	28			.76	1	3.38	29
41	Wilmington, Del			.66	12					.66	9
42	Des Moines, Iowa			.22	2	.67	2			.89	13
43	Lawrence, Mass			4.30	31	.37	1			4.67	31
44	Tacoma, Wash										
45	Kansas City, Kans										
46	St. Joseph, Mo										
47	Troy, N. Y			.95	15					.95	14
48	Utica, N. Y			1.31	19					1.31	17
49	Elizabeth, N. J	1.15	4	4.53	32					5.68	33
50	Schenectady, N. Y			1.60	21					1.60	20
51	Hoboken, N. J			2.11	25					2.11	24
52	Manchester, N. H			1.23	18					1.23	16
53	Evansville, Ind			.48	7					.48	4
54	Norfolk, Va			.60	9					.60	6
55	Wilkes-Barre, Pa			.67	13					.67	10
56	Peoria, Ill			.30	5					.30	2
57	Erie, Pa	.72	3	.67	13					1.39	18
58	Savannah, Ga			1.22	17					1.22	15
59	Oklahoma, Okla			.80	14					.80	12
60	Harrisburg, Pa	.40	1	.29	4					.69	11
61	Charleston, S. C										
62	Portland, Me			.52	8					.52	5
63	East St. Louis, Ill			.42	6					.42	3
64	Holyoke, Mass			3.12	29					3.12	28
65	Jacksonville, Fla										
66	Brockton, Mass			2.21	26					2.21	25
67	Bayonne, N. J			1.94	23					1.94	23
68	Johnstown, Pa										
69	Passaic, N. J			2.42	27					2.42	26
70	Wichita, Kans	1.89	5							1.89	22
71	Covington, Ky			.19	1					.19	1
72	Allentown, Pa			.63	10					.63	7
73	Springfield, Ill	2.73	6	.27	3					3.00	27
74	Saginaw, Mich	57	2	1.00	16					1.57	19
75	Canton, Ohio										

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

	Cities.	Normal schools.		Evening schools.		Vacation schools.		Special schools.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
76	Sioux City, Iowa										
77	Lancaster, Pa			1.64	9					1.64	7
78	Atlantic City, N. J			.70	6					.70	4
79	Little Rock, Ark										
80	Rockford, Ill			.20	1					.20	1
81	Bay City, Mich			.24	2			0.64	2	.88	5
82	York, Pa										
83	Sacramento, Cal			4.59	14			.58	1	5.17	14
84	Chattanooga, Tenn										
85	Malden, Mass			2.47	12					2.47	11
86	Pueblo, Colo										
87	Haverhill, Mass			1.32	8	0.41	1			1.73	8
88	New Britain, Conn			2.06	10					2.06	9
89	Topeka, Kans										
90	Davenport, Iowa										
91	Wheeling, W. Va										
92	Chester, Pa										
93	Dubuque, Iowa										
94	Woonsocket, R. I			2.50	13					2.50	12
95	Racine, Wis			1.05	7			2.05	4	3.10	13
96	Knoxville, Tenn										
97	New Castle, Pa										
98	Joliet, Ill			.30	3					.30	2
99	Auburn, N. Y			.61	5					.61	3
100	Taunton, Mass			2.20	11					2.20	10
101	Oshkosh, Wis			.53	4			.91	3	1.44	6
102	Joplin, Mo										
103	Newport, Ky										

TABLE 27.—*Showing for each object of expense of instruction, operation, and maintenance of all schools the percentage of total expenses; based on Table 20.*

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
	Group I: Median	69.55	7	1.45	6	3.75	7	6.55	7	2.86	7	0.55	3+	0.615	6+	1.44	7	0.445	6+	0.27	3+	0.79	6	5.245	6+	95.40	7
	Middle 50 per cent	66.80 to 73.90	4 to 10	1.015 to 2.885	4 to 8	1.45 to 4.11	4 to 10	5.25 to 7.52	4 to 10	1.58 to 3.21	4 to 10	......	....	.34 to .65	4 to 8	.86 to 2.48	4 to 10	.33 to .99	4 to 9	......	....	.47 to 2.44	4 to 8	4.12 to 7.57	4 to 9	93.81 to 95.93	4 to 9
	Group II: Median	69.97	10+	1.20	8	3.12	10+	6.435	10+	3.685	10+	.41	6	.37	9	.88	9+	1.195	6+	.15	6	.70	8	4.735	10+	94.905	10+
	Middle 50 per cent	67.31 to 72.82	6 to 15	.76 to 4.765	5 to 11	2.37 to 3.68	6 to 14	5.72 to 7.71	6 to 15	2.37 to 4.60	6 to 15	.325 to .555	4 to 8	.27 to .62	5 to 12	.60 to 1.29	5 to 14	.745 to 1.79	5 to 9	.07 to .41	3 to 9	.465 to .98	5 to 11	3.19 to 6.97	6 to 15	94.08 to 95.94	6 to 15
	Group III: Median	67.61	21+	2.55	17	4.59	19+	6.66	20+	3.56	19	.40	7+	.42	15	1.19	20+	.525	13+	.23	7+	.81	16	4.965	19+	94.44	21+
	Middle 50 per cent	64.18 to 70.33	12 to 31	1.27 to 3.49	9 to 25	2.31 to 5.64	11 to 29	5.82 to 7.63	12 to 29	2.46 to 4.25	11 to 29	.275 to .63	5 to 11	.245 to .805	10 to 22	.83 to 2.08	11 to 30	.35 to 1.21	8 to 20	.08 to .56	4 to 10	.43 to 1.71	9 to 24	3.77 to 6.71	11 to 29	92.80 to 95.50	12 to 31
	Group IV: Median	65.795	14+	2.455	11+	2.80	14+	7.145	14+	4.22	14	.43	8	.44	13	1.05	14	1.03	7+	.215	6+	.905	9+	5.54	13+	93.855	13+
	Middle 50 per cent	63.80 to 68.70	8 to 21	1.57 to 4.27	6 to 17	1.58 to 4.90	8 to 21	6.53 to 7.77	8 to 21	2.57 to 5.46	8 to 20	.28 to .58	5 to 10	.21 to .68	7 to 18	.685 to 1.96	8 to 20	.585 to 1.24	5 to 10	.13 to .50	4 to 9	.51 to 1.79	5 to 14	3.205 to 6.69	7 to 19	92.70 to 94.93	7 to 20
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.																										
1	Chicago, Ill.	69.29	6	0.29	1	2.17	5	8.02	11	3.07	9	......	....	0.34	4	0.49	3	0.40	6	0.18	2	0.08	1	7.97	10	92.39	8
2	St. Louis, Mo.	67.72	5	1.50	7	3.94	9	6.77	9	1.58	4	0.21	2	.60	6	1.31	6	.29	3	.06	1	.42	3	3.28	2	87.68	1
3	Cleveland, Ohio	62.40	2	5.90	10	1.02	2	7.52	10	2.86	7	......	....	.63	7	3.90	12	.33	4	......	....	.29	2	4.80	5	89.65	2
4	Baltimore, Md	69.55	7	.40	2	5.08	11	6.64	8	3.29	11	......	....	.65	8	.03	1	.34	5	......	....	.62	5	7.19	8	93.81	4
5	Detroit, Mich	73.90	10	.79	3	3.29	6	8.29	12	2.80	6	......	....	.03	1	2.24	9	2.17	12	......	....	......	....	2.66	1	96.15	10

6	Buffalo, N. Y	61.85	1	7.98	11	3.90	8	5.80	6	2.94	8	.90	5	.81	9	2.75	11	.99	9	.36	6	2.06	8	5.41	7	95.75	8
7	San Francisco, Cal	76.06	12	......	....	.51	1	8.45	13	.61	1	.81	4	.31	3	2.48	10	.23	2	......	....	1.15	7	3.99	3	94.60	6
8	Milwaukee, Wis	71.32	9	1.65	8	1.45	4	5.45	5	3.65	13	.95	6	.86	11	.39	2	1.88	11	.33	5	......	....	7.57	9	95.40	7
9	Newark, N. J	70.97	8	1.45	6	3.75	7	5.25	4	1.88	5	.29	3	.85	10	.86	4	.49	7	......	....	3.59	10	5.08	6	94.46	5
10	New Orleans, La	66.30	3	1.38	5	5.30	12	4.50	1	.82	2	......	....	.12	2	6.47	13	......	....	......	....	2.82	9	8.22	11	95.93	9
11	Washington, D. C	66.80	4	4.12	9	4.11	10	5.07	3	3.64	12	......	....	.42	5	.98	5	1.06	10	.25	3	.53	4	9.31	12	96.29	11
12	Los Angeles, Cal	80.48	13	......	....	1.20	3	4.83	2	1.31	3	.01	1	.63	7	1.44	7	.65	8	.29	4	.79	6	4.12	4	95.75	8
13	Minneapolis, Minn	74.50	11	1.24	4	6.87	13	6.55	7	3.21	10	......	....	......	....	1.56	8	.20	1	......	....	4.18	11	......	....	98.31	12

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

14	Jersey City, N. J	74.57	19	1.01	6	3.29	11	5.72	6	3.63	10	......	....	0.28	6	0.60	5	1.85	10	0.02	2	0.57	6	4.76	11	96.30	17
15	Providence, R. I	66.26	4	1.20	8	4.21	16	6.83	12	5.29	18	0.57	9	.34	8	.46	2	......	....	.08	4	.80	10	8.46	17	94.50	8
16	St. Paul, Minn	72.82	15	1.09	7	.27	1	12.80	20	3.47	9	.59	10	......	....	2.30	17	......	....	1.06	11	......	....	3.44	8	97.84	20
17	Portland, Oreg	73.82	17	......	....	2.62	8	5.02	2	1.46	3	.41	6	.47	10	.79	8	1.93	11	.01	1	......	....	6.97	15	93.50	4
18	Columbus, Ohio	61.93	1	11.73	15	2.49	7	7.71	15	3.42	8	......	....	......	....	.66	6	1.73	9	1.59	12	1.49	13	2.50	4	95.25	13
19	Toledo, Ohio	74.33	18	.61	4	3.92	15	4.51	1	4.12	14	......	....	.27	5	3.76	19	2.18	12	......	....	1.04	12	1.48	2	96.22	16
20	Oakland, Cal	78.56	20	......	....	2.03	4	5.09	4	.96	1	.38	5	.33	7	.92	10	1.16	6	.59	10	2.02	14	5.42	12	97.46	19
21	Syracuse, N. Y	68.75	9	.21	2	2.63	9	6.51	11	5.76	20	......	....	.71	15	2.13	16	.59	4	......	....	......	....	3.87	9	91.16	1
22	New Haven, Conn	67.31	6	6.73	12	3.68	14	8.25	17	4.60	15	......	....	.47	10	1.84	15	.27	3	.41	9	.21	3	.33	1	95.10	12
23	Birmingham, Ala	67.13	5	9.06	14	.57	2	6.12	8	2.78	7	.47	7	.54	11	1.07	12	1.43	8	.15	6	.11	2	3.36	7	92.79	3
24	Memphis, Tenn	71.52	12	2.80	11	3.44	12	7.63	14	2.04	5	.54	8	.17	2	1.03	11	......	....	.07	3	2.47	15	2.37	3	94.08	6
25	Scranton, Pa	69.43	10	......	....	6.30	18	8.08	16	3.75	12	1.02	11	.21	4	.55	3	......	....	......	....	......	....	2.94	5	92.28	2
26	Paterson, N. J	73.40	16	.20	1	2.12	5	5.08	3	1.64	4	.21	1	.08	1	.42	1	......	....	......	....	.78	9	10.85	20	94.78	9
27	Omaha, Nebr	70.41	11	......	....	3.64	13	7.37	13	3.96	13	......	....	.18	3	1.29	14	1.16	6	......	....	.43	4	6.41	14	94.85	10
28	Grand Rapids, Mich	64.32	3	8.93	13	2.95	10	6.16	9	2.37	6	.30	3	.69	13	.42	1	.90	5	.11	5	.50	5	8.29	16	95.94	15
29	Nashville, Tenn	72.10	13	1.93	10	1.78	3	5.25	5	1.33	2	.25	2	......	....	1.08	13	......	....	.07	3	.61	7	10.56	19	94.96	11
30	Lowell, Mass	63.62	2	......	....	3.29	11	10.70	19	4.80	16	.35	4	1.06	16	.56	4	.07	1	......	....	.09	1	9.42	18	93.96	5
31	Cambridge, Mass	68.34	7	.24	3	2.37	6	8.36	18	5.64	19	......	....	.62	12	.76	7	2.44	13	......	....	.92	11	5.83	13	95.52	14
32	Spokane, Wash	68.44	8	.91	5	6.34	19	6.36	10	3.74	11	......	....	.37	9	3.55	18	1.23	7	.29	7	......	....	3.19	6	94.42	7
33	Albany, N. Y	72.34	14	1.30	9	5.26	17	5.85	7	5.20	17	......	....	.70	14	.84	9	.13	2	.37	8	.70	8	4.71	10	97.40	18

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn	62.15	7	6.72	28	5.40	27	6.21	17	4.06	26	0.58	10	1.06	27	3.68	39	......	....	0.32	9	0.72	15	4.40	16	95.30	30
35	Trenton, N. J	71.92	36	1.30	10	4.65	21	5.52	9	3.20	17	......	....	.40	14	2.52	34	2.00	26	.04	2	.66	14	2.32	4	94.53	22
36	New Bedford, Mass	63.73	10	2.70	20	5.16	26	7.41	26	4.92	33	......	....	.30	11	1.30	22	.50	13	......	....	.35	7	5.88	25	92.25	8
37	Reading, Pa	69.56	30	.56	2	5.64	29	10.04	38	4.12	27	......	....	.14	6	1.27	21	.29	7	......	....	1.24	21	2.69	6	95.55	33
38	Camden, N. J	68.17	24	.24	1	5.63	28	8.26	34	3.08	15	.08	1	.18	7	.69	9	1.44	24	......	....	2.13	27	5.75	24	95.65	35
39	Dallas, Tex	69.24	27	12.88	33	1.28	4	6.02	14	2.32	10	......	....	......	....	.36	5	.71	16	.70	11	1.99	25	......	....	95.50	31
40	Springfield, Mass	62.84	9	5.76	27	5.14	25	7.41	26	5.76	37	......	....	1.15	29	2.35	32	1.25	22	......	....	.58	12	3.39	8	95.63	34

TABLE 27.—*Showing for each object of expense of instruction, operation, and maintenance of all schools the percentage of total expenses; based on Table 20*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Textbooks, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
41	Wilmington, Del	73.62	39	......	....	4.51	18	5.71	11	4.25	29	......	....	......	....	.85	13	.45	11	......	....	......	....	6.71	29	96.10	37
42	Des Moines, Iowa	65.38	13	2.84	21	6.20	33	7.47	27	3.71	23	.49	9	.28	10	.53	7	1.21	20	......	....	......	....	6.60	27	94.71	25
43	Lawrence, Mass	68.20	25	2.87	22	3.88	15	6.73	22	5.13	35	......	....	.97	26	1.67	27	......	....	......	....	.09	1	4.76	18	94.30	20
44	Tacoma, Wash	66.30	16	7.47	29	4.14	16	6.98	23	2.79	13	.45	8	.20	8	1.69	28	1.18	19	.16	6	1.63	23	1.51	1	93.50	14
45	Kansas City, Kans	71.30	34	......	....	2.34	12	7.06	24	3.61	21	.64	12	.54	20	1.09	19	1.32	23	.08	4	.44	10	4.28	14	92.70	11
46	St. Joseph, Mo	71.34	35	1.64	11	1.47	6	10.88	39	3.73	24	......	....	.76	22	.05	1	.73	17	.25	8	......	....	3.28	7	94.13	19
47	Troy, N. Y	58.30	4	2.40	16	2.22	10	6.54	19	5.11	34	......	....	.48	18	1.00	15	.16	4	.81	12	2.04	26	11.04	38	90.10	4
48	Utica, N. Y	70.46	32	......	....	2.31	11	7.95	31	5.44	36	......	....	.89	25	2.08	30	.05	1	.04	2	.12	2	3.56	10	92.90	12
49	Elizabeth, N. J	67.52	21	1.27	9	7.40	37	6.54	19	3.05	14	.33	6	1.07	28	.81	10	......	....	.05	3	3.58	31	2.36	5	93.98	18
50	Schenectady, N. Y	72.13	37	2.95	23	2.03	9	4.52	4	4.45	30	......	....	1.15	29	.55	8	.73	17	.56	10	......	....	6.43	26	95.50	31
51	Hoboken, N. J	69.40	29	......	....	4.62	20	4.82	5	1.97	5	.35	7	.54	20	1.11	20	.48	12	......	....	.42	8	8.95	34	92.66	10
52	Manchester, N. H	70.50	33	......	....	4.19	17	4.90	6	7.27	39	.84	13	.58	21	1.02	17	.38	10	......	....	1.09	18	4.76	18	95.53	32
53	Evansville, Ind	66.88	18	9.36	30	1.52	7	7.72	30	2.46	11	......	....	.07	3	2.04	29	.21	5	......	....	.22	4	5.64	23	96.12	38
54	Norfolk, Va	76.53	40	......	....	1.73	8	8.69	37	2.17	8	......	....	.37	13	.83	11	.45	11	......	....	1.11	19	3,77	11	95.65	35
55	Wilkes-Barre, Pa	66.45	17	1.02	5	6.94	35	6.33	18	3.62	22	.25	4	.30	11	.90	14	.36	9	......	....	7.43	32	......	...	93.60	15
56	Peoria, Ill	72.33	38	3.36	24	1.37	5	6.20	16	2.46	11	......	....	.30	11	.17	2	1.61	25	......	....	......	....	4.55	17	92.35	9
57	Erie, Pa	56.35	2	9.62	31	5.83	30	7.50	28	4.16	28	......	....	.86	24	1.35	23	.09	2	......	....	.50	11	2.24	3	88.50	3
58	Savannah, Ga	85.10	41	1.20	8	......	....	3.96	3	1.45	2	......	....	.09	4	.48	6	.55	14	......	....	......	....	1.52	2	94.35	21
59	Oklahoma, Okla	70.50	33	2.65	19	4.76	22	5.25	7	1.87	4	......	....	......	....	......	....	......	....	......	....	3.45	30	5.42	22	93.90	17
60	Harrisburg, Pa	62.82	8	1.10	6	8.29	38	8.24	33	3.56	19	.12	2	.50	19	.32	4	.89	18	......	....	2.41	28	4.80	19	93.05	13
61	Charleston, S. C	56.53	3	......	....	.26	2	1.53	1	......	....	......	....	......	....	10.39	40	......	....			......	....	3.79	12	72.50	1
62	Portland, Me	66.12	15	1.67	12	5.04	23	8.28	35	4.71	31	.08	1	.47	17	1.01	16	.50	13	.21	7	.43	9	6.68	28	95.20	29
63	East St. Louis, Ill	55.90	1	12.24	32	2.50	13	11.30	40	2.10	6	1.06	15	.28	10	.84	12	.64	15	.56	10	.81	16	3.82	13	92.05	7
64	Holyoke, Mass	64.35	12	1.73	13	4.56	19	6.62	20	4.84	32	.68	11	1.18	30	1.39	24	......	....	......	....	.97	17	8.63	33	94.90	27
65	Jacksonville, Fla	67.70	22	......	....	......	....	3.24	2	.97	1	......	....	......	....	2.59	35	.15	8	......	....	2.70	29	7.15	30	84.50	2

66	Brockton, Mass	66.98	19	1.18	7	7.30	36	7.17	25	6.11	38	.30	5	.33	12	2.40	33	.35	8	.11	5	......	....	4.31	15	96.54	39
67	Bayonne, N. J	69.30	28	.82	3	5.95	31	5.47	8	2.26	9	......	....	......	....	3.13	37	.26	6	......	....	1.22	20	7.32	31	95.73	36
68	Johnstown, Pa	60.78	5	2.55	17	6.24	34	7.54	29	2.32	10	.92	14	.05	2	......	....	......	....	......	....	......	....	14.30	39	94.70	24
69	Passaic, N. J	70.20	31	......	....	6.10	32	5.54	10	3.35	18	.23	3	.85	23	1.44	25	1.24	21	.03	1	.29	5	5.33	21	94.60	23
70	Wichita, Kans	65.45	14	2.63	18	2.31	11	5.93	12	2.58	12	......	....	......	....	3.59	38	.35	8	......	....	1.28	22	10.82	37	94.94	28
71	Covington, Ky	66.99	20	3.73	26	.12	1	6.14	15	1.49	3	.30	5	.46	16	1.48	26	......	....	......	....	.30	6	10.35	36	91.36	6
72	Allentown, Pa	61.65	6	.95	4	5.10	24	6.70	21	3.58	20	......	....	.21	9	2.10	31	......	....	.25	8	.50	11	10.31	35	91.35	5
73	Springfield, Ill	68.65	26	3.49	25	.31	3	6.00	13	2.15	7	......	....	.11	5	2.68	36	2.54	28	......	....	1.71	24	8.01	32	95.65	35
74	Saginaw Mich	64.01	11	2.16	14	3.56	14	8.22	32	3.87	25	.63	11	.42	15	1.03	18	2.23	27	1.85	13	.64	13	5.13	20	93.75	16
75	Canton, Ohio	67.81	23	2.37	15	9.02	39	8.44	36	3.14	16	......	....	.02	1	.28	3	......	....	......	....	.20	3	3.52	9	94.80	26

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

76	Sioux City, Iowa	68.41	20	0.84	1	1.42	7	8.50	24	5.49	21	0.50	9	0.14	4	1.88	20	......	....	......	....	......	....	6.65	19	93.83	13
77	Lancaster, Pa	61.33	5	......	....	4.90	21	8.76	25	4.48	15	.43	8	......	....	3.03	24	......	....	......	....	3.33	16	7.24	22	93.88	14
78	Atlantic City, N. J	60.41	3	......	....	6.49	25	5.43	5	5.81	23	1.90	14	......	....	9.93	26	......	....	......	....	......	....	5.98	16	95.95	22
79	Little Rock, Ark	68.39	19	2.56	13	2.32	13	5.19	4	3.17	10	.85	13	.44	13	.93	11	......	....	......	....	1.79	14	2.79	4	88.48	2
80	Rockford, Ill	64.68	11	2.99	14	.54	1	9.74	27	5.84	24	......	....	.75	19	2.93	23	1.52	13	......	....	.06	1	8.24	24	97.29	27
81	Bay City, Mich	64.50	10	8.53	21	3.60	19	7.13	14	3.20	11	.43	8	.19	6	.96	13	......	....	......	....	.23	2	6.16	17	94.93	20
82	York, Pa	63.80	8	1.57	6	7.02	26	7.92	22	4.22	14	.63	11	.64	16	......	....	......	....	......	....	.65	7	5.20	12	91.65	3
83	Sacramento, Cal	74.45	27	2.51	12	3.57	18	6.85	10	.83	1	......	....	.67	17	1.75	19	.69	6	.50	9	1.11	12	3.22	7	96.15	24
84	Chattanooga, Tenn	77.58	28	......	....	1.75	10	4.42	2	2.28	6	.36	7	.09	3	1.70	18	......	....	......	....	......	....	6.17	18	94.35	17
85	Malden, Mass	69.80	22	1.48	5	5.82	24	6.96	12	7.05	25	......	....	.79	21	.39	2	......	....	......	....	.30	3	4.07	8	96.66	25
86	Pueblo, Colo	68.70	21	4.27	17	3.02	16	8.18	23	2.51	7	.23	3	.36	11	.72	8	......	....	.02	1	1.50	13	3.19	6	92.70	7
87	Haverhill, Mass	68.31	18	1.33	4	4.96	22	6.45	7	4.82	18	......	....	.54	15	.34	1	.50	4	......	....	.51	5	5.58	14	93.34	8
88	New Britain, Conn	56.89	2	3.66	16	7.47	27	6.44	6	5.65	22	......	....	1.43	24	.54	5	......	....	.51	10	......	....	2.11	1	84.70	1
89	Topeka, Kans	73.30	26	.86	2	1.60	9	7.50	18	4.00	13	.10	2	.80	22	.49	4	.88	7	.13	4	.82	9	5.50	13	95.98	23
90	Davenport, Iowa	52.00	1	13.14	23	.55	2	6.97	13	2.63	8	......	....	.18	5	.58	6	1.46	12	.16	6	3.78	17	10.60	26	92.05	5
91	Wheeling, W. Va	62.40	6	10.30	22	1.10	4	4.31	1	2.87	9	......	....	.68	18	2.04	21	.67	5	......	....	1.03	11	8.00	23	93.40	9
92	Chester, Pa	64.70	12	......	....	4.19	20	9.04	26	......	....	......	....	......	....	15.57	27	......	....	......	....	......	....	......	....	93.50	10
93	Dubuque, Iowa	66.10	16	5.91	20	.61	3	7.23	16	4.54	17	.79	12	.38	12	.47	3	1.22	9	.42	8	.40	4	6.73	20	94.80	19
94	Woonsocket, R. I	62.96	7	2.40	11	5.00	23	7.25	17	7.26	26	.53	10	.25	8	1.05	14	.09	2	.27	7	.99	10	5.95	15	94.00	15
95	Racine, Wis	72.44	24	4.60	18	1.58	8	6.94	11	3.36	12	......	....	.77	20	.86	10	2.75	14	.61	11	.77	8	2.12	2	96.80	26
96	Knoxville, Tenn	72.75	25	.84	1	1.12	5	6.56	9	1.51	2	.31	5	.08	2	.94	12	......	....	......	....	4.34	18	5.08	11	93.53	11
97	New Castle, Pa	64.75	13	2.28	10	7.02	26	7.57	19	2.10	4	.02	1	.67	17	2.55	22	......	....	......	....	.06	1	6.78	21	93.80	12
98	Joliet, Ill	65.90	15	2.07	8	2.60	14	9.84	28	4.50	16	......	....	.52	14	1.10	15	.07	1	.14	5	.59	6	4.57	9	91.90	4
99	Auburn, N. Y	70.49	23	2.27	9	1.87	11	6.53	8	5.43	20	.33	6	.35	10	.65	7	1.18	8	.10	3	......	....	2.45	3	91.65	3
100	Taunton, Mass	65.69	14	1.84	7	3.20	17	7.16	15	8.23	27	.25	4	.21	7	3.55	25	.13	3	......	....	......	....	4.75	10	95.00	21
101	Oshkosh, Wis	64.34	9	5.84	19	2.18	12	7.77	21	4.90	19	......	....	1.15	23	.75	9	1.23	10	1.10	12	2.57	15	2.81	5	94.64	18
102	Joplin, Mo	60.75	4	1.04	3	3.00	15	5.17	3	2.22	5	......	....	.04	1	1.29	16	1.25	11	.04	2	19.40	19	......	....	94.20	16
103	Newport, Ky	66.58	17	3.05	15	1.25	6	7.76	20	1.81	3	......	....	.30	9	1.40	17	......	....	......	....	......	....	10.10	25	92.25	6

TABLE 28.—*Showing for each item of miscellaneous expenses the percentage of total expenses; based on Table 21.*

	Cities.	School census and elections.		Truant officers and police.		Medical inspectors and nurses.		Pensions.		Rent.		Insurance.		Transportation of pupils.		Payments to schools and institutions.		Other miscellaneous expenses.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
	Group I: Median	0.16	3	0.435	3+	0.30	5	0.75	3+	0.30	6+	0.095	4+	0.095	1+	1.06	4+	0.20	4	2.32	7
	Middle 50 per cents.	......	......	.16 to .49	2 to 5	.25 to .37	3 to 6	......	......	.15 to .44	4 to 9	.07 to .27	3 to 6	......	......	.73 to 1.40	3 to 6	......	......	1.58 to 3.10	4 to 10
	Group II: Median	.24	6	.24	6	.235	3+	.475	3+	.275	6+	.36	7+	.06	2	.68	4+	.25	4	2.24	10
	Middle 50 per cents.	.16 to .34	4 to 8	.21 to .39	4 to 9	.19 to .32	3 to 5	......	......	.09 to .50	4 to 9	.10 to 1.00	4 to 11	......	......	.53 to 1.61	3 to 6	......	......	1.15 to 3.10	6 to 14
	Group III: Median	.195	10+	.36	14	.36	6	.81	6	.34	14+	.49	16	.22	5	.415	8+	.16	3+	2.075	18+
	Middle 50 per cents.	.15 to .38	7 to 14	.285 to .655	9 to 22	.27 to .475	4 to 9	.48 to 1.035	4 to 8	.14 to .58	8 to 20	.27 to .89	8 to 25	.14 to .41	3 to 7	.27 to .58	5 to 12	......	......	1.205 to 3.01	10 to 26
	Group IV: Median	.195	9+	.48	13	.30	4+	......	......	.395	6+	.57	8	.50	1+	.26	4	.75	3	2.62	21+
	Middle 50 per cents.	.14 to .34	6 to 14	.30 to .58	7 to 19	.20 to .38	3 to 6	......	......	.29 to .57	4 to 9	.31 to 1.26	5 to 13	......	......	......	......	......	......	1.37 to 2.49	8 to 21
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.																				
1	Chicago, Ill	0.06	1	0.49	5	0.26	4	0.71	2	0.55	10	......	......	0.09	1	1.30	5	0.35	7	3.81	11
2	St. Louis, Mo	.16	3	.52	6	.09	1	......	......	.15	4	0.08	4	.10	2	2.63	8	.28	5	4.05	13
3	Cleveland, Ohio	.15	2	.40	3	......	......	......	......	.07	1	.04	2	......	......	1.40	6	......	......	2.32	7
4	Baltimore, Md	......	......	.49	5	.30	5	......	......	2.58	12	.07	3	......	......	.49	1	.10	2	4.02	12
5	Detroit, Mich	.27	4	.47	4	.40	7	.73	3	.16	5	.02	1	......	......	......	......	......	......	2.05	5

6	Buffalo, N. Y	......	......	.49	5	.17	2	.94	5	.31	7	.37	7	......	......	.82	4	......	......	3.10	10
7	San Francisco, Cal	.47	5	......	......	......	......	.35	1	.44	9	......	......	......	......	1.65	7	.03	1	2.94	9
8	Milwaukee, Wis	.16	3	.40	3	......	......	......	......	.14	3	......	......	......	......	......	......	.20	4	.91	2
9	Newark, N. J	......	......	......	......	.37	6	.77	4	.29	6	.11	5	......	......	.73	3	.33	6	2.60	8
10	New Orleans, La	......	......	......	......	.41	8	.95	6	......	......	......	......	......	......	......	......	.16	3	1.51	3
11	Washington, D. C	......	......	.12	1	.30	5	......	......	1.16	11	......	......	......	......	.59	2	......	......	2.17	6
12	Los Angeles, Cal	.49	6	.16	2	.25	3	......	......	.41	8	.27	6	......	......	......	......	......	......	1.58	4
13	Minneapolis, Minn	......	......	.16	2	......	......	......	......	.10	2	.53	8	......	......	......	......	......	......	.79	1

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

14	Jersey City, N. J	......	......	0.22	5	0.19	3	0.38	3	......	......	0.93	10	......	......	......	......	0.16	3	1.88	8
15	Providence, R. I	0.19	5	.39	9	.16	2	.76	5	0.09	4	.02	1	......	......	1.61	6	.02	1	2.24	10
16	St. Paul, Minn	......	......	.12	1	......	......	......	......	.27	6	.04	2	......	......	......	......	......	......	.43	1
17	Portland, Oreg	.06	1	.18	2	.12	1	......	......	.09	4	1.59	13	......	......	......	......	2.46	6	4.50	18
18	Columbus, Ohio	.24	6	.24	6	......	......	......	......	......	......	......	......	......	......	.69	5	......	......	1.17	7
19	Toledo, Ohio	.16	4	.43	10	......	......	......	......	......	......	......	......	......	......	......	......	......	......	.59	2
20	Oakland, Cal	.43	11	.12	1	......	......	......	......	.01	1	.10	4	......	......	......	......	......	......	.66	4
21	Syracuse, N. Y	......	......	.33	8	.72	7	.88	6	.28	7	.34	7	......	......	1.76	7	2.66	7	6.97	19
22	New Haven, Conn	.16	4	.24	6	.32	5	......	......	.62	11	1.00	11	......	......	......	......	......	......	2.34	11
23	Birmingham, Ala	.34	8	......	......	......	......	......	......	.31	8	1.89	15	......	......	.67	4	......	......	3.21	15
24	Memphis, Tenn	.38	9	......	......	......	......	......	......	.56	10	1.42	12	......	......	......	......	......	......	2.36	12
25	Scranton, Pa	......	......	.21	4	......	......	......	......	1.48	12	.29	5	......	......	......	......	......	......	1.98	9
26	Paterson, N. J	......	......	......	......	.28	4	.57	4	2.53	13	.05	3	......	......	.17	2	......	......	3.60	16
27	Omaha, Nebr	.42	10	.24	6	......	......	......	......	.04	2	.38	8	......	......	.07	1	......	......	1.15	6
28	Grand Rapids, Mich	.34	8	.25	7	......	......	......	......	.12	5	......	......	......	......	......	......	.05	2	.76	5
29	Nashville, Tenn	.32	7	......	......	.19	3	......	......	.44	9	1.77	14	......	......	......	......	......	......	2.72	13
30	Lowell, Mass	......	......	1.00	13	......	......	......	......	.06	3	.31	6	0.08	3	2.72	8	.25	4	4.42	17
31	Cambridge, Mass	.10	2	.72	12	.51	6	.30	2	......	......	.02	1	.06	2	.53	3	......	......	2.24	10
32	Spokane, Wash	.13	3	.20	3	......	......	......	......	......	......	.81	9	......	......	......	......	1.96	5	3.10	14
33	Albany, N. Y	......	......	.46	11	......	......	.16	1	......	......	......	......	.01	1	......	......	......	......	.63	3

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn	0.20	11	0.24	5	0.32	4	......	......	0.40	17	1.30	30	0.14	3	......	......	......	......	2.60	24
35	Trenton, N. J	......	......	.29	9	.32	4	0.87	7	1.02	23	.60	19	......	......	0.37	7	......	......	3.47	30
36	New Bedford, Mass	.17	8	1.04	27	......	......	......	......	.68	21	......	......	......	......	2.53	14	......	......	4.57	34
37	Reading, Pa	......	......	.25	6	.04	1	.42	3	......	......	.34	11	......	......	......	......	......	......	1.05	6
38	Camden, N. J	......	......	.68	24	.56	11	.94	8	.02	1	.15	3	......	......	......	......	......	......	2.35	20
39	Dallas, Tex	.35	13	......	......	......	......	......	......	.23	10	.67	21	......	......	......	......	......	......	1.25	10
40	Springfield, Mass	.09	4	.47	18	.56	11	......	......	......	......	......	......	.22	5	.11	2	......	......	1.45	11

TABLE 28.—*Showing for each item of miscellaneous expenses the percentage of total expenses; based on Table 21*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	School census and elections.		Truant officers and police.		Medical inspectors and nurses.		Pensions.		Rent.		Insurance.		Transportation of pupils.		Payments to schools and institutions.		Other miscellaneous expenses.		Total.	
		Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.	Percentage.	Rank.
41	Wilmington, Del	.11	5							.10	6	.15	3							.36	1
42	Des Moines, Iowa	.14	6	.30	10	.16	2					.36	12	.18	4	.49	11	0.89	6	2.52	22
43	Lawrence, Mass	.24	12	1.18	31	.84	12			.47	19	.08	2			.75	13	.24	5	3.80	32
44	Tacoma, Wash	.38	14	.20	3							.89	25			.48	10			1.95	16
45	Kansas City, Kans	.20	11	.36	14							.48	15							1.04	5
46	St. Joseph, Mo	.48	17	.34	12	.16	2			.14	8	.17	4							1.29	11
47	Troy, N. Y	.02	2	.45	17			.81	6	.58	20	.18	5			5.30	15	.06	1	7.40	35
48	Utica, N. Y			.66	23					1.06	24	1.66	32							3.38	28
49	Elizabeth, N. J			.19	2	.45	9	.54	4	.33	14	.96	27	.02	1	.58	12			3.05	27
50	Schenectady, N. Y			.65	22	.37	7	1.13	9											2.15	19
51	Hoboken, N. J			.61	21			.78	5	.41	18	.59	18	.41	7			.14	3	2.94	25
52	Manchester, N. H	.62	18	.74	26					.08	5	.52	17							1.96	17
53	Evansville, Ind	.19	10	.36	14					.11	7	.20	6					.18	4	1.04	5
54	Norfolk, Va									1.23	26	.02	1							1.25	10
55	Wilkes-Barre, Pa			.17	1							.40	13							.57	2
56	Peoria, Ill	.19	10	.27	7			.08	1	.30	16	1.12	28							2.00	18
57	Erie, Pa	.18	9	.52	19							1.76	33					.07	2	2.53	23
58	Savannah, Ga	.65	19							.16	9	.31	10							1.12	8
59	Oklahoma, Okla	.01	1	.71	25					.25	11	2.43	34							3.40	29
60	Harrisburg, Pa			.22	4	.33	5	1.51	11			.20	6			.24	4			2.50	21
61	Charleston, S. C							1.45	10			1.15	29			22.40	16			25.00	37
62	Portland, Me	.42	16	.34	12					.05	3	1.50	31	.68	8					2.97	26
63	East St. Louis, Ill	.69	20	1.11	29					1.17	25	.93	26							3.90	33
64	Holyoke, Mass	.07	3	1.13	30	.36	6			.35	15			.29	6	.15	3			2.35	20
65	Jacksonville, Fla									.06	4	.63	20	7.60	9	.41	8			8.70	36
66	Brockton, Mass	.15	7	.28	8	.50	10							.04	2	.02	1			1.07	7
67	Bayonne, N. J			.35	13	.22	3			.91	22	.25	7							1.73	15
68	Johnstown, Pa			.24	5					.04	2	.72	22							1.00	3
69	Passaic, N. J			.38	15	.38	8	.40	2	.29	13	.43	14			.27	5			2.15	19
70	Wichita, Kans			.32	11					.27	12	.27	8			.30	6			1.16	9

71	Covington, Ky	.41	15	1.09	28					1.88	27	.28	9							3.66	31
72	Allentown, Pa			.55	20							.80	23							1.35	12
73	Springfield, Ill			.42	16					.35	15	.27	8							1.04	5
74	Saginaw, Mich	.17	8									.83	24			.42	9			1.42	13
75	Canton, Ohio	.24	12	.30	10							.49	16							1.03	4

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

76	Sioux City, Iowa			0.30	7					0.21	3	1.69	16	0.72	2					2.92	23
77	Lancaster, Pa			.80	22	0.36	5					.08	3			0.58	6	0.54	2	2.36	18
78	Atlantic City, N. J			.98	23	.62	8													1.60	12
79	Little Rock, Ark	0.25	11									2.16	17							2.41	20
80	Rockford, Ill	.11	3	.25	3															.36	2
81	Bay City, Mich	.34	14	.75	21							.28	4							1.37	8
82	York, Pa			.28	6							1.20	12					.75	3	2.23	17
83	Sacramento, Cal	.27	12	.48	13					.58	10	.57	8							1.90	14
84	Chattanooga, Tenn			.16	1					.34	5	.31	5			.26	4			1.07	6
85	Malden, Mass	.13	5	.44	12	.24	4									.10	2			.91	5
86	Pueblo, Colo	.42	15	.71	20							.95	9					.04	1	2.12	16
87	Haverhill, Mass	.07	1	.43	11	.20	8			.71	12	1.03	10			.27	5			3.72	26
88	New Britain, Conn	.21	10	.49	14							1.26	13	.28	1	9.25	7			11.50	28
89	Topeka, Kans	.12	4	.17	2							1.18	11							1.47	11
90	Davenport, Iowa	.10	2	.26	4							.57	8					4.00	5	4.93	27
91	Wheeling, W. Va	.18	9	.56	18					.65	11	.01	1							1.40	10
92	Chester, Pa			.50	15															.50	3
93	Dubuque, Iowa	.34	14	.31	8					.51	8	.07	2							1.23	7
94	Woonsocket, R. I	.34	14	1.60	25	.16	2			.11	2	.28	4							2.49	21
95	Racine, Wis	.17	8																	.17	1
96	Knoxville, Tenn					.38	6			.35	6	1.27	14			.06	1			2.06	15
97	New Castle, Pa			.27	5					.09	1	1.44	15							1.80	13
98	Joliet, Ill	.16	7	.32	9					.44	7	.46	6							1.38	9
99	Auburn, N. Y	.34	14	.40	10	.07	1			.57	9	.46	6					1.16	4	3.00	25
100	Taunton, Mass	.17	8	.53	16	.56	7									.24	3			2.95	24
101	Oshkosh, Wis	.14	6	.54	17							1.69	16							2.37	19
102	Joplin, Mo	.32	13	.58	19															.90	4
103	Newport, Ky	.46	16	1.49	24					.29	4	.51	7							2.75	22

TABLE 29.—*Showing, for each object of expense, average annual cost per pupil, based on enrollment, of instruction, operation, and maintenance of elementary schools in a selected list of cities of 30,000 population and over, 1909.*

Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacement of equipment.		Repairs to buildings.		Total.	
	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.
Group I: Median	$20.36	5+	$0.365	4+	$0.885	5+	$1.725	5+	$0.74	5+	$0.165	2+	$0.11	5	$0.37	4	$0.09	5	$0.05	2+	$0.20	5	$1.50	5	$26.54	5+
Middle 50 per cents	19.19 to 21.09	4 to 7	.27 to .46	3 to 6	.675 to 1.03	4 to 7	1.385 to 2.055	4 to 7	.515 to .845	4 to 7	......	....	.05 to .16	3 to 7	.34 to .51	3 to 6	.07 to .19	3 to 7	......	....	.12 to .56	3 to 7	1.09 to 1.70	3 to 7	24.285 to 27.65	4 to 7
Group II: Median	17.65	8	.355	5+	.73	8	1.74	8	.86	8	1.05	5+	.07	6	.18	6	.33	4+	.04	2+	.18	5	1.36	7	23.99	8
Middle 50 per cents	15.175 to 18.915	4 to 11	.20 to .52	3 to 6	.425 to .84	5 to 11	1.375 to 2.085	5 to 11	.395 to 1.29	5 to 11	.07 to .115	3 to 5	.045 to .125	3 to 6	.155 to .255	4 to 8	.17 to .35	3 to 6	......	....	.10 to .21	3 to 7	.925 to 1.95	5 to 10	21.745 to 25.725	5 to 11
Group III: Median	15.61	14	.455	9+	1.065	13+	1.57	14	.80	14	.12	5	.08	6	.21	8	.09	5	.06	2+	.245	8+	1.145	11+	21.60	14
Middle 50 per cents	13.455 to 18.16	8 to 20	.28 to 1.05	5 to 14	.585 to 1.23	8 to 17	1.255 to 1.905	8 to 20	.61 to .98	8 to 19	.06 to .14	3 to 7	.06 to .17	5 to 10	.14 to .42	5 to 14	.08 to .17	4 to 8	......	....	.13 to .51	6 to 12	.72 to 1.67	6 to 17	19.43 to 25.50	8 to 20
Group IV: Median	14.30	9	.36	6	.83	9	1.81	9	.865	8+	.105	4+	.06	4	.17	6+	.33	2+	.04	2	.14	7	1.40	8	21.62	9
Middle 50 per cents	12.86 to 16.66	5 to 12	.295 to .715	5 to 8	.41 to 1.24	5 to 13	1.22 to 2.04	5 to 12	.59 to 1.31	5 to 12	.05 to .125	3 to 6	.04 to .13	3 to 7	.11 to .47	4 to 10	......	....	......	....	.10 to .38	4 to 10	.595 to 1.72	5 to 11	1.855 to 23.22	5 to 13

GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.

1	Chicago, Ill.	$20.06	4	$0.08	2	$0.50	3	$2.40	9	$0.93	9	......	....	$0.05	3	$0.14	1	$0.09	5	$0.06	3	$0.03	1	$2.43	8	$26.77	6
2	St. Louis, Mo.	18.30	3	.42	5	.95	7	1.40	4	40	3	$0.07	1	.17	8	.34	3	.04	2	.02	1	.09	2	.97	2	23.17	8
4	Baltimore, Md.	13.95	1	.04	1	.85	4	1.32	1	.73	5	......	....	.11	5	......	....	.03	1	......	....	.14	4	1.54	6	18.71	1
5	Detroit, Mich.	20.20	5	.27	3	.89	6	2.24	8	.78	7	......	....	.01	1	.38	5	.75	9	......	....	......	....	.79	1	26.31	5
6	Buffalo, N. Y.	14.32	2	1.99	8	.88	5	1.37	3	.75	6	.23	3	.17	8	.64	7	.19	7	.07	4	.56	7	1.34	4	22.51	2
7	San Francisco, Cal.	26.43	10	......	....	.19	1	3.38	10	.22	1	.81	4	.04	2	.96	8	.08	4	......	....	.46	6	1.50	5	33.57	10
8	Newark, N. J.	20.94	7	.46	6	1.11	8	1.66	5	.63	4	.10	2	.10	4	.19	2	.13	6	......	....	1.17	9	1.70	7	28.19	8
10	Washington, D. C.	21.24	8	1.06	7	1.52	9	1.79	6	1.35	10	......	....	.12	6	.34	3	.23	8	......	....	.12	3	3.55	9	31.32	9
11	Los Angeles, Cal.	21.48	9	......	....	.33	2	1.34	2	.32	2	......	....	.16	7	.37	4	.07	3	.04	2	.20	5	1.09	3	25.40	4
12	Minneapolis, Minn.	20.52	6	.31	4	1.88	10	1.87	7	.91	8	......	....	......	....	.51	6	......	....	......	....	1.11	8	......	....	27.11	7

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

16	St. Paul, Minn.	$17.15	7	$0.32	3	$0.08	1	$3.18	15	$0.86	8	$0.15	7	......	....	$0.55	11	......	....	......	....	......	....	$0.84	4	$23.13	6
17	Portland, Oreg.	19.35	12	......	....	.55	6	1.33	3	.33	3	.11	5	$0.11	6	.19	7	$0.48	8	......	....	......	....	1.92	9	24.37	9
20	Oakland, Cal.	24.70	15	......	....	.77	10	1.74	8	.31	2	.12	6	.07	4	.25	8	.35	6	$0.21	4	$0.63	9	1.95	11	31.10	15
21	Syracuse, N. Y.	15.55	4	.06	1	.73	8	1.41	5	1.53	15	......	....	.14	7	.40	10	.17	8	......	....	......	....	1.01	5	21.00	4
23	Birmingham, Ala.	10.05	1	1.49	8	.09	2	.82	1	.37	4	.06	2	......	....	.16	4	......	....	......	....	.01	1	.57	2	13.62	1
24	Memphis, Tenn.	14.03	3	.62	7	.71	7	1.54	6	.42	5	.11	5	.04	2	.18	6	......	....	......	....	.53	8	.52	1	18.70	3
25	Scranton, Pa.	16.95	6	......	....	1.77	14	2.24	13	1.16	10	.30	8	.03	1	.12	1	......	....	......	....	......	....	.73	3	23.30	7
26	Paterson, N. J.	18.09	9	.06	1	.44	5	1.34	4	.48	6	.06	2	......	....	.12	1	......	....	......	....	.21	7	3.19	4	23.99	8
27	Omaha, Nebr.	18.47	10	......	....	.84	11	2.09	12	1.14	9	......	....	.04	2	.26	9	.32	4	......	....	.09	2	1.95	10	25.20	11
28	Grand Rapids, Mich.	19.42	13	2.63	9	.84	12	1.91	9	.76	7	.08	3	.20	9	.14	2	.34	5	......	....	.17	4	3.00	12	29.49	14
29	Nashville, Tenn.	12.25	2	.35	4	.29	3	.85	2	.23	1	.04	1	......	....	.18	6	......	....	.01	1	.10	8	1.82	8	15.12	2
30	Lowell, Mass.	17.65	8	......	....	.76	9	3.10	14	1.39	13	.10	4	.15	8	.17	5	......	....	......	....	......	....	3.03	13	26.35	12
31	Cambridge, Mass.	16.32	5	.08	2	.41	4	2.07	10	1.38	12	......	....	.07	4	.15	3	.47	7	......	....	.18	5	1.36	7	22.49	5
32	Spokane, Wash.	20.70	14	.36	5	1.82	15	2.08	11	1.20	11	......	....	.05	3	1.09	12	.06	2	.03	2	......	....	1.01	5	28.40	13
33	Albany, N. Y.	18.58	11	.42	6	1.24	13	1.60	7	1.49	14	......	....	.09	5	.16	4	.01	1	.05	3	.20	6	1.29	6	25.13	10

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

35	Trenton, N. J.	$19.97	23	$0.42	9	$1.16	17	$1.57	14	$0.97	19	......	....	$0.06	5	$0.71	19	......	....	$0.01	1	$0.14	6	$0.69	4	$25.70	21
37	Reading, Pa.	15.71	15	.16	2	1.03	13	2.33	25	1.03	21	......	....	.01	1	.25	10	$0.08	4	......	....	.30	10	.70	5	21.60	14
38	Camden, N. J.	19.20	22	.04	1	1.60	20	2.19	24	.91	17	$0.03	1	.03	3	.17	7	.21	10	......	....	.60	13	1.12	11	26.10	23
39	Dallas, Tex.	11.13	2	2.50	18	.21	2	.91	2	.38	3	......	....	......	....	.05	1	......	....	......	....	.42	12	......	....	15.60	2

TABLE 29.—*Showing, for each object of expense, average annual cost per pupil, based on enrollment, of instruction, operation, and maintenance of elementary schools in a selected list of cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors, supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacement of equipment.		Repairs to buildings.		Total.	
		Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank
41	Wilmington, Del	$14.31	13	......	....	$0.78	10	$1.13	6	$0.92	18	......	....	......	....	$0.14	5	$0.11	7	......	....	......	....	$1.37	15	$18.76	6
42	Des Moines, Iowa	18.42	21	$0.49	10	2.04	23	2.12	23	.99	20	$0.14	7	$0.06	5	.17	7	.20	9	......	....	......	....	1.67	17	26.30	24
43	Lawrence, Mass	21.04	26	1.07	15	1.12	16	2.33	25	1.80	26	......	....	.24	14	.64	17	......	....	......	....	$0.03	1	1.81	18	30.08	27
44	Tacoma, Wash	17.90	20	2.27	17	1.12	16	1.73	17	.77	13	.14	7	.06	5	.42	14	.09	5	......	....	.34	11	.46	2	25.30	20
45	Kansas City, Kans	14.14	11	......	....	.41	4	1.34	8	.76	12	.12	5	.02	2	.16	6	.08	3	......	....	.05	2	.97	9	18.05	4
48	Utica, N. Y	16.74	19	......	....	.51	6	1.85	19	1.50	24	......	....	.23	13	.55	16	.01	1	$0.01	1	.03	1	.72	6	22.15	17
49	Elizabeth, N. J	14.04	10	.33	7	1.54	19	1.40	10	.65	9	.07	4	.22	12	.14	5	......	....	......	....	.85	16	.46	2	19.70	8
50	Schenectady, N. Y	15.61	14	.78	12	.54	7	.99	3	1.05	23	......	....	.21	11	.12	3	.08	4	.11	2	1.53	17	......	....	21.02	11
51	Hoboken, N. J	22.01	27	......	....	1.30	18	1.49	12	.59	7	.13	6	.10	8	.36	12	......	....	......	....	.14	6	3.08	23	29.15	25
52	Manchester, N. H	16.01	16	......	....	.71	9	1.08	5	1.79	25	.20	8	.12	9	.22	9	.10	6	......	....	.22	8	1.17	12	21.62	15
55	Wilkes-Barre, Pa	13.27	5	.24	3	1.54	19	1.36	9	.83	16	.06	2	.06	5	.17	7	......	....	......	....	1.63	18	......	....	19.16	7
56	Peoria, Ill	20.44	24	.79	13	.40	3	1.79	18	.67	10	......	....	.08	6	.05	1	.47	11	......	....	......	....	1.36	14	26.05	22
57	Erie, Pa	13.50	8	2.17	16	1.11	15	1.89	20	1.04	22	......	....	.21	11	.13	4	.03	2	......	....	.12	5	.62	3	20.82	10
58	Savannah, Ga	12.59	4	......	....	......	....	.57	1	.22	1	......	....	......	....	.08	2	......	....	......	....	......	....	.25	1	13.71	1
59	Oklahoma, Okla	13.41	7	.66	11	.83	11	1.17	7	.42	4	......	....	......	....	......	....	......	....	......	....	.77	15	1.21	13	18.39	5
60	Harrisburg, Pa	13.33	6	.31	6	1.84	22	1.92	21	.80	14	.03	1	.09	7	.08	2	......	....	......	....	.62	14	1.08	10	20.10	9
63	East St. Louis, Ill	12.55	3	3.03	19	.63	8	2.76	26	.47	6	.24	9	.04	4	.21	8	.17	8	.14	3	.18	7	.96	8	21.88	13
67	Bayonne, N. J	21.00	25	.28	5	1.76	21	1.69	16	.72	11	......	....	......	....	.93	20	.09	5	......	....	.42	12	2.39	20	29.28	26
68	Johnstown, Pa	14.21	12	.38	8	.95	12	1.93	22	.63	8	.26	10	.02	2	......	....	......	....	......	....	......	....	.76	7	22.14	16
69	Passaic, N. J	16.51	18	......	....	1.16	17	1.44	11	.91	17	.06	3	.17	10	.41	13	......	....	......	....	.08	4	1.54	16	22.28	18
70	Wichita, Kans	10.96	1	.26	4	.43	5	1.06	4	.44	5	......	....	......	....	.67	18	......	....	......	....	.27	9	2.16	19	16.25	3
71	Covington, Ky	16.35	17	1.05	14	.04	1	1.53	13	.36	2	.06	3	.10	8	.32	11	......	....	......	....	.07	8	2.44	21	22.32	19
72	Allentown, Pa	14.02	9	.26	4	1.10	14	1.68	15	.81	15	......	....	.06	5	.49	15	......	....	......	....	.14	6	2.74	22	21.30	12

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

76	Sioux City, Iowa	$30.31	11			$2.44	10	$4.28	15	$1.87	11	$0.25	6	$0.21	4	$0.73	12							$1.63	8	$41.72	10
77	Lancaster, Pa	27.60	6			2.49	11	3.13	12	2.49	14	.13	4			.83	13					$1.66	9	5.01	13	43.34	11
78	Atlantic City, N. J	50.24	16			2.67	12	4.45	16	3.33	15	1.11	8			4.00	16									65.80	16
79	Little Rock, Ark	20.90	2			.55	4	1.93	5	1.06	4	.14	5	.09	2	.26	3					.21	4	.81	3	25.95	1
81	Bay City, Mich	34.29	13	$4.20	6	1.51	6	2.24	8	1.28	6	.11	3	.08	1	.41	7					.05	1	2.46	11	46.63	14
82	York, Pa	25.10	5	.75	1	3.64	13	2.66	10	1.40	7	.26	7	.94	13							.16	3	.36	1	35.27	4
85	Malden, Mass	41.75	15	1.13	3	5.71	16	4.01	13	4.84	16			.91	12	.38	6									58.73	15
86	Pueblo, Colo	53.43	17			1.98	8	6.11	17	1.44	8			.12	3	.44	8			$0.10	3	.96	7	2.61	12	67.19	17
87	Haverhill, Mass	34.66	14	.82	2	3.84	14	1.33	1	1.74	9			.75	11	.04	1	$0.60	2					1.17	6	44.95	12
88	New Britain, Conn	23.01	3	5.86	7	.92	5	3.02	11	2.03	12			.89	7	.67	11			.46	4			1.01	4	37.37	6
89	Topeka, Kans	27.81	7			.20	2	2.19	7	2.28	13	.08	2	.73	10	.11	2			.03	1			2.27	10	35.70	5
92	Chester, Pa	31.33	12					4.12	14							3.30	15									38.75	7
93	Dubuque, Iowa	27.91	8	3.38	4	.12	1	2.12	6	1.18	5	1.36	9	.68	9	.56	10	.24	1	.78	5	.26	5	.59	2	39.18	8
95	Racine, Wis	29.50	10	3.84	5	1.63	7	2.41	9	1.77	10			.64	8	.47	9	2.92	4	1.03	6	.75	6	1.50	7	46.46	13
96	Knoxville, Tenn	23.07	4			.43	3	1.43	3	.50	2	.08	2	.08	1	.29	4					1.39	8	2.21	9	29.48	3
97	New Castle, Pa	29.25	9			5.69	15	1.56	4	.45	1	.02	1	.35	6	1.51	14					.06	2	1.09	5	39.98	9
102	Joplin, Mo	20.34	1			2.05	9	1.37	2	.98	3			.25	5	.35	5	2.55	3	.07	2					27.96	2

TABLE 30.—*Showing for each object of expense average annual cost per pupil, based on enrollment, of instruction, operation, and maintenance of secondary schools in a selected list of cities of 30,000 population and over, 1909.*

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.
	Group I: Median	$50.985	5+	$1.18	3	$2.745	5+	$3.405	5+	$1.28	5+	$1.85	2+	$0.38	5	$0.82	5+	$0.92	5	$0.44	2+	$0.37	5	$2.85	5	$64.39	5+
	Middle 50 per cent	46.32 to 54.30	4 to 7	....	....	1.74 to 3.61	4 to 7	2.705 to 4.555	4 to 7	.91 to 1.595	4 to 7	....	....	.26 to .49	3 to 6	.425 to 1.30	4 to 7	.88 to 1.14	3 to 7	....	....	.19 to .74	3 to 7	2.27 to 3.32	3 to 7	57.995 to 71.32	4 to 7
	Group II: Median	36.15	8	3.26	1+	2.17	7+	2.95	8	1.24	7+	.23	5	.51	6	.70	8	.695	5+	.34	3	.275	4+	1.79	7	48.39	8
	Middle 50 per cent	32.73 to 43.50	5 to 11	....	....	.32 to 2.97	5 to 10	2.12 to 3.82	5 to 11	.855 to 1.68	5 to 10	.16 to .26	3 to 7	.16 to .73	4 to 8	.27 to 1.18	5 to 10	.295 to 1.74	4 to 7	....	....	.14 to .35	3 to 5	1.31 to 2.31	4 to 10	40.415 to 54.435	5 to 11
	Group III: Median	36.93	13	3.39	6	3.58	12+	2.84	14	1.29	12+	.205	6+	.40	10	.57	13	1.80	7+	.405	3+	.51	8	1.42	12	49.47	14
	Middle 50 per cent	32.725 to 39.495	7 to 19	2.405 to 3.96	4 to 8	1.69 to 4.40	7 to 18	2.09 to 3.74	8 to 20	.865 to 1.705	8 to 17	.14 to .28	4 to 9	.19 to .56	5 to 14	.29 to 1.02	7 to 19	1.49 to 3.035	5 to 10	....	....	.23 to .82	5 to 12	.99 to 3.225	7 to 17	43.915 to 55.775	8 to 20
	Group IV: Median	29.25	9	3.38	4	2.015	8+	2.41	9	1.59	8+	.135	4+	.37	6+	.455	8+	1.575	2+	.28	3+	.26	5	1.50	7	39.98	9
	Middle 50 per cent	25.10 to 34.29	5 to 13	....	....	.92 to 2.67	5 to 12	1.93 to 4.01	5 to 13	1.18 to 2.03	5 to 12	.095 to .255	3 to 6	.165 to .705	4 to 9	.35 to .73	5 to 12	....	....	....	....	.16 to .96	3 to 7	1.01 to 2.27	4 to 10	35.70 to 46.46	5 to 13
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.																										
1	Chicago, Ill.	$49.45	5	$0.15	1	$2.91	6	$4.21	7	$1.69	8	....	....	$0.38	5	$0.37	3	$0.88	3	....	....	$0.05	1	$4.56	9	$64.65	6
2	St. Louis, Mo.	67.26	10	....	....	5.90	9	8.42	10	2.22	10	$0.10	1	.49	6	1.58	9	.92	5	$0.01	1	.19	3	2.12	2	89.20	10
4	Baltimore, Md.	53.30	7	1.18	3	7.22	10	4.90	8	1.14	5	....	....	.26	3	.09	1	.90	4	....	....	.23	4	3.60	8	72.82	8
5	Detroit, Mich.	44.31	3	....	....	2.25	4	5.27	9	1.75	9	....	....	.03	1	2.42	10	....	....	....	....	....	....	1.21	1	57.24	8

6	Buffalo, N. Y.	30.24	1	2.81	4	2.58	5	2.80	4	.97	4	.25	3	.73	7	1.35	8	1.01	6	.31	2	.18	2	2.27	3	45.50	1
7	San Francisco, Cal.	55.30	8	......	....	.21	1	2.90	5	.39	1	.47	4	.16	2	1.25	7	.23	1	......	....	.37	5	2.85	5	64.13	5
8	Newark, N. J.	64.24	9	......	....	3.81	8	3.91	6	.85	3	.12	2	1.18	8	.62	5	1.14	7	......	....	2.36	9	3.32	7	81.55	9
10	Washington, D. C.	52.52	6	4.40	5	1.23	3	2.57	2	1.50	7	......	....	.49	6	.48	4	1.86	9	.85	4	.74	7	3.18	6	69.82	7
11	Los Angeles, Cal.	48.33	4	......	....	.63	2	2.46	1	.72	2	......	....	.36	4	1.02	6	1.37	8	.57	3	.57	6	2.72	4	58.75	4
12	Minneapolis, Minn.	36.08	2	.82	2	3.41	7	2.61	3	1.42	6	......	....	......	....	.17	2	.52	2	......	....	2.35	8	......	....	47.38	2

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

16	St. Paul, Minn.	$42.20	11	......	....	......	....	$5.73	15	$1.56	10	$0.26	8	......	....	$1.28	11	......	....	$3.18	6	......	....	$1.71	6	$55.92	12
17	Portland, Oreg.	32.05	4	......	....	$1.50	6	1.86	3	.96	5	.15	2	$0.13	3	.48	6	$1.24	7	......	....	......	....	2.55	11	40.92	5
20	Oakland, Cal.	44.80	12	......	....	.15	1	2.38	6	.50	3	.26	7	.19	4	.90	9	.85	6	.22	1	$1.20	8	1.50	5	52.95	11
21	Syracuse, N. Y.	33.41	5	......	....	.19	3	3.68	11	1.13	6	......	....	.51	6	1.57	13	.04	1	......	....	......	....	.98	2	41.51	6
23	Birmingham, Ala.	22.50	2	$2.04	1	.17	2	2.95	8	1.29	8	.23	5	.79	9	.35	5	2.24	8	.26	2	.07	2	.59	1	33.48	3
24	Memphis, Tenn.	22.10	1	......	....	.24	4	1.89	4	.34	2	.16	3	......	....	.66	7	......	....	.26	2	.24	4	......	....	25.89	1
25	Scranton, Pa.	61.72	15	......	....	3.02	11	3.96	12	.75	4	.36	9	.07	2	.70	8	......	....	......	....	......	....	2.72	12	73.30	15
26	Paterson, N. J.	36.15	8	......	....	2.18	8	1.30	2	......	....	......	....	......	....	.07	1	......	....	......	....	.21	3	......	....	39.91	4
27	Omaha, Nebr.	35.46	7	......	....	2.80	9	2.52	7	1.31	9	......	....	.04	1	1.35	12	.54	5	......	....	.39	6	1.31	4	45.72	7
28	Grand Rapids, Mich.	37.00	9	4.48	2	2.16	7	3.12	10	1.19	7	.24	6	.52	7	.17	3	.08	2	.34	3	.05	1	1.80	8	51.15	9
29	Nashville, Tenn.	23.00	3	......	....	.40	5	1.02	1	.12	1	.05	1	......	....	.19	4	......	....	......	....	.07	2	1.06	3	25.91	2
30	Lowell, Mass.	33.49	6	......	....	3.56	12	4.13	13	2.38	13	.20	4	1.61	11	.16	2	.24	3	......	....	.31	5	2.31	10	48.39	8
31	Cambridge, Mass.	46.96	14	......	....	2.92	10	5.42	14	3.87	14	......	....	.49	5	.90	9	2.79	9	......	....	1.08	7	4.97	13	69.40	14
32	Spokane, Wash.	45.60	13	......	....	5.01	14	3.11	9	2.03	12	......	....	.67	8	2.29	14	3.13	10	.58	4	......	....	1.79	7	64.21	13
33	Albany, N. Y.	38.11	10	......	....	4.42	13	2.35	5	1.80	11	......	....	1.34	10	1.08	10	.35	4	.83	5	.31	5	2.21	9	52.80	10

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

35	Trenton, N. J.	$47.21	24	......	....	$4.10	17	$3.01	17	$1.27	10	......	....	$0.43	13	$0.83	17	$10.11	14	......	....	$0.49	7	$1.42	12	$68.87	24
37	Reading, Pa.	35.28	11	......	....	5.98	21	4.29	24	1.28	11	......	....	.33	8	1.21	22	......	....	......	....	.55	....	.55	4	49.47	14
38	Camden, N. J.	44.50	21	$0.91	2	3.63	13	8.35	27	1.16	9	......	....	.63	15	1.01	18	5.77	12	......	....	1.57	16	16.40	23	83.93	25
39	Dallas, Tex.	39.53	20	2.94	5	.75	4	4.21	22	1.37	13	......	....	......	....	.29	7	1.67	6	$1.66	6	.14	3	......	....	52.56	19
41	Wilmington, Del.	27.60	4	......	....	2.71	10	2.07	7	.86	7	......	....	......	....	.57	13	......	....	......	....	......	....	2.03	13	35.84	3
42	Des Moines, Iowa.	32.90	7	3.87	8	1.03	6	3.89	21	2.39	23	$0.22	7	.28	6	.12	2	1.72	7	......	....	......	....	4.98	20	51.40	18
43	Lawrence, Mass.	45.40	22	......	....	3.87	15	2.11	8	2.41	24	......	....	1.66	19	.17	5	......	....	......	....	.04	1	.54	3	56.20	21
44	Tacoma, Wash.	32.55	6	2.26	3	2.02	9	2.28	9	1.29	12	.98	12	.72	16	1.03	20	1.88	8	.33	3	1.39	15	.44	2	47.17	12
45	Kansas City, Kans.	36.97	14	......	....	1.69	7	4.23	23	1.58	15	.39	10	1.02	17	1.02	19	2.23	9	.17	1	.51	8	1.29	9	51.10	17
48	Utica, N. Y.	38.47	17	......	....	1.77	8	5.18	25	.66	4	......	....	.29	7	.59	14	.02	1	......	....	.06	2	3.74	18	50.78	16
49	Elizabeth, N. J.	33.45	9	......	....	3.53	12	2.93	16	1.06	8	.18	5	.03	1	.32	9	......	....	......	....	1.11	13	2.15	15	44.76	10
50	Schenectady, N. Y.	37.98	16	......	....	......	....	1.89	6	1.59	16	......	....	1.23	18	.36	10	1.44	4	.48	4	......	....	2.14	14	47.11	11

TABLE 30.—*Showing for each object of expense average annual cost per pupil, based on enrollment, of instruction, operation, and maintenance of secondary schools in a selected list of cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Salaries of teachers.		Salaries and expenses of supervisors.		Text-books, stationery, and general school supplies.		Janitors, engineers, and firemen.		Fuel.		Water.		Light and power.		Janitors' supplies and sundry expenses.		Apparatus and manual training equipment.		School libraries.		Repairs and replacements of equipment.		Repairs to buildings.		Total.	
		Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.	Average cost.	Rank.
51	Hoboken, N. J.	$68.20	26	......	....	$9.75	22	$6.06	26	$1.90	20	$0.05	3	$0.17	3	$0.81	16	$3.55	11	......	....	$0.51	8	$6.55	22	$97.55	27
52	Manchester, N. H.	28.60	5	......	....	4.09	16	2.33	10	1.92	21	.28	9	.41	11	.51	12	......	....	......	....	.78	11	1.31	10	40.23	4
55	Wilkes-Barre, Pa.	20.60	1	$0.05	1	1.02	5	1.06	1	.26	1	.03	1	.11	2	.39	11	.68	2	......	....	1.27	14	......	....	25.47	1
56	Peoria, Ill.	36.93	13	4.06	9	.55	2	2.53	11	1.74	18	......	....	.19	5	.15	4	.71	3	......	....	......	....	1.41	11	48.26	13
57	Erie, Pa.	24.91	3	5.93	11	5.19	20	2.89	15	1.67	17	......	....	.40	10	2.19	24	......	....	......	....	.23	5	.38	1	43.79	7
58	Savannah, Ga.	32.96	8	3.39	6	......	....	1.83	5	.41	2	......	....	.19	4	.14	3	1.54	5	......	....	......	....	......	....	40.46	5
59	Oklahoma, Okla.	35.48	12	......	....	2.93	11	1.16	2	.41	2	......	....	......	....	......	....	......	....	......	....	.82	12	1.20	8	42.00	6
60	Harrisburg, Pa.	39.46	19	......	....	4.40	18	3.59	20	1.89	19	.04	2	.42	12	.08	1	2.52	10	......	....	.47	6	2.48	16	55.35	20
63	East St. Louis, Ill.	37.06	15	3.73	7	.70	3	3.43	19	1.42	14	.78	11	.39	9	.31	8	......	....	$0.22	2	.63	10	.93	6	49.60	15
67	Bayonne, N. J.	47.14	23	......	....	4.86	19	3.20	18	1.27	10	......	....	......	....	3.11	25	......	....	......	....	......	....	2.71	17	62.29	23
68	Johnstown, Pa.	39.37	18	4.39	10	10.10	23	2.84	14	.52	3	.14	4	.03	1	......	....	......	....	......	....	......	....	4.19	19	61.58	22
69	Passaic, N. J.	65.36	25	......	....	12.22	24	2.75	13	1.29	12	.19	6	.56	14	.19	6	7.46	13	......	....	......	....	......	....	90.02	26
70	Wichita, Kans.	20.95	2	2.55	4	.48	1	1.56	4	.86	6	......	....	......	....	.69	15	......	....	......	....	......	....	.61	5	27.70	2
71	Covington, Ky.	32.55	6	......	....	......	....	2.72	12	.72	5	.26	8	.40	10	1.29	23			......	....	.22	4	6.41	21	44.57	9
72	Allentown, Pa.	33.72	10	......	....	3.72	14	1.53	3	2.11	22	......	....	......	....	1.05	21	......	....	.86	5	......	....	1.05	7	44.04	8
	GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.																										
76	Sioux City, Iowa.	$16.66	12	$0.24	3	$0.17	2	$2.02	11	$1.30	13	$0.12	6	$0.02	1	$0.47	10	......	....	......	....	......	....	$1.75	12	$22.84	12
77	Lancaster, Pa.	12.33	4	......	....	.89	10	1.82	10	.86	8	.10	4	.03	2	.68	12	......	....	......	....	$0.66	12	1.28	7	18.65	7
78	Atlantic City, N. J.	13.38	7	......	....	1.65	17	1.22	5	1.41	14	.46	9	......	....	2.52	13	......	....	......	....	......	....	1.69	11	22.33	11
79	Little Rock, Ark.	12.91	6	.59	7	.45	6	.93	3	.59	5	.18	8	.09	6	.18	7	......	....	......	....	.38	10	.53	3	16.83	4

81	Bay City, Mich	14.30	9	1.96	12	.83	9	1.81	9	.77	7	.11	5	.04	3	.24	9	......	....	......	....	.06	2	1.50	10	21.62	9
82	York, Pa	12.86	5	.30	5	1.33	14	1.64	7	.87	9	.13	7	.06	4	......	....	......	....	......	....	.14	7	1.22	6	18.55	5
85	Malden, Mass	17.48	13	.36	6	1.16	12	1.81	9	1.75	16	......	....	.06	4	.08	2	......	....	......	....	.10	4	1.40	8	24.20	14
86	Pueblo, Colo	13.96	8	1.10	10	.64	8	1.68	8	.55	3	.06	3	.07	5	.16	6	......	....	......	....	.32	9	.64	5	19.17	8
87	Haverhill, Mass	18.75	15	.36	6	1.24	13	2.08	14	1.46	15	......	....	.06	4	.11	3	$0.10	1	......	....	.18	8	1.75	12	26.12	17
88	New Britain, Conn	10.05	2	.30	5	1.54	16	1.13	4	1.06	11	......	....	.28	10	.06	1	......	....	$0.07	3	......	....	.37	1	14.86	2
89	Topeka, Kans	19.29	16	.29	4	.53	7	2.10	15	.91	10	.02	1	.14	8	.14	5	.30	2	.04	2	.13	6	1.44	9	25.33	16
92	Chester, Pa	14.98	10	......	....	1.13	11	2.12	16	......	....	......	....	......	....	3.96	14	......	....	......	....	......	....	......	....	22.19	10
93	Dubuque, Iowa	17.54	14	1.42	11	.18	3	2.06	13	1.31	12	.02	1	.02	1	.06	1	.36	3	.02	1	.09	3	2.12	14	25.20	15
95	Racine, Wis	14.30	9	.76	9	.23	4	1.45	6	.64	6	......	....	.13	7	.16	6	.39	4	.04	2	.12	5	.38	2	18.60	6
96	Knoxville, Tenn	8.64	1	.12	1	.13	1	.83	1	.18	1	.04	2	......	....	.11	4	......	....	......	....	.52	11	.55	4	11.12	1
97	New Castle, Pa	15.86	11	.67	8	1.46	15	2.04	12	.57	4	......	....	.16	9	.59	11	......	....	......	....	.01	1	1.86	13	23.22	13
102	Joplin, Mo	10.20	3	.21	2	.41	5	.90	2	.35	2	......	....	......	....	.23	8	......	....	......	....	3.90	13	......	....	16.20	3

TABLE 31.—*Showing ratio of expenses of schools to total city expenses and to expenses of police department and expenses of schools per capita of population in 103 cities of 30,000 population and over, 1909.*

	Cities.	Expenses of schools.	Total city expenses.	Ratio of school expenses to total city expenses.	Rank.	Expenses of police department.	Ratio of school expenses to expenses of police department.	Rank.	Population 1908. [Revised estimate.]	Expenses of schools per capita of population.	Rank.
	Group I: Median			0.259	7		2.12	7		$4.26	7
	Middle 50 per cents			.238 to .316	4 to 10		1.55 to 2.93	4 to 10		3.96 to 4.76	4 to 10
	Group II: Median			.3345	10+		3.01	10+		4.28	10+
	Middle 50 per cents			.303 to .385	6 to 15		2.23 to 3.41	6 to 15		3.76 to 4.45	6 to 15
	Group III: Median			.365	20+		3.42	21+		3.68	21+
	Middle 50 per cents			.330 to .419	12 to 30		2.51 to 4.23	12 to 30		3.30 to 4.33	12 to 30
	Group IV: Median			.377	14+		4.33	14+		3.685	14+
	Middle 50 per cents			.342 to .437	8 to 21		3.20 to 5.39	8 to 21		3.24 to 4.41	8 to 21
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 OR OVER IN 1910.										
1	Chicago, Ill.	$9,492,789	$36,614,344	0.259	7	$6,121,585	1.55	4	2,092,869	$4.54	9
2	St. Louis, Mo	2,798,654	11,977,382	.234	3	1,975,272	1.41	2	665,802	4.20	6
3	Cleveland, Ohio	2,374,107	7,494,451	.317	11	806,865	2.94	11	523,187	4.53	8
4	Baltimore, Md	1,824,823	7,586,501	.240	5	1,245,921	1.47	3	549,079	3.32	2
5	Detroit, Mich	1,706,858	6,059,654	.282	9	803,614	2.12	7	426,592	4.00	5
6	Buffalo, N. Y	1,607,378	6,751,968	.238	4	954,176	1.69	5	405,714	3.96	4
7	San Francisco, Cal	1,717,249	8,536,968	.201	1	1,412,719	1.22	1	402,836	4.26	7
8	Milwaukee, Wis	1,314,257	5,202,614	.252	6	539,275	2.42	8	350,852	3.66	3
9	Newark, N. J	1,944,549	6,141,072	.316	10	758,748	2.56	9	322,784	6.02	12
10	New Orleans, La	952,247	4,122,356	.231	2	315,865	3.01	12	329,207	2.89	1

11	Washington, D. C.	$2,055,915	$7,816,180	.263	8	$1,109,903	1.86	6	321,128	$6.40	13
12	Los Angeles, Cal.	1,288,852	3,657,413	.352	12	441,213	2.93	10	270,491	4.76	10
13	Minneapolis, Minn.	1,369,481	3,698,710	.370	13	324,278	4.24	13	286,241	4.78	11

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

14	Jersey City, N. J.	$960,225	$2,809,977	0.342	12	$544,878	1.76	1	254,286	$3.78	7
15	Providence, R. I.	954,168	3,239,020	.265	3	433,262	2.20	5	214,445	4.45	14
16	St. Paul, Minn.	755,981	2,490,356	.304	7	263,678	2.86	8	207,928	3.64	4
17	Portland, Oreg.	671,062	1,747,566	.383	14	190,354	3.53	16	178,506	3.76	6
18	Columbus, Ohio.	693,826	1,734,719	.401	17	203,421	3.41	15	163,625	4.24	10
19	Toledo, Ohio.	645,916	1,675,393	.385	15	195,597	3.30	13	161,533	4.00	8
20	Oakland, Cal.	586,014	1,755,781	.333	10	177,529	3.31	14	110,070	5.32	19
21	Syracuse, N. Y.	584,536	1,927,157	.303	6	192,000	3.05	12	129,574	4.51	15
22	New Haven, Conn.	556,589	1,663,299	.336	11	249,995	2.23	6	128,747	4.32	11
23	Birmingham, Ala.	160,318	646,068	.248	2	79,901	2.02	4	62,146	2.58	3
24	Memphis, Tenn.	288,401	1,369,480	.210	1	154,814	1.86	2	115,107	2.51	1
25	Scranton, Pa.	552,007	1,108,183	.498	20	91,057	6.06	19	124,810	4.42	13
26	Paterson, N. J.	524,307	1,328,554	.394	16	176,103	2.98	10	120,188	4.36	12
27	Omaha, Nebr.	544,819	1,474,331	.371	13	129,037	4.23	17	120,005	4.54	16
28	Grand Rapids, Mich.	538,899	1,308,373	.412	18	114,305	4.73	18	107,191	5.03	18
29	Nashville, Tenn.	274,065	910,979	.301	5	107,606	2.54	7	108,768	2.52	2
30	Lowell, Mass.	429,964	1,338,131	.321	8	149,716	2.87	9	101,908	4.22	9
31	Cambridge, Mass.	507,322	1,570,390	.323	9	166,957	3.04	11	102,038	4.97	17
32	Spokane, Wash.	541,795	1,207,288	.448	19	76,563	7.07	20	92,713	5.84	20
33	Albany, N. Y.	363,556	1,288,255	.282	4	190,864	1.91	3	99,311	3.66	5

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

34	Hartford, Conn.	$535,300	$1,565,775	0.341	15	$164,272	3.26	20	95,294	$5.61	37
35	Trenton, N. J.	408,423	976,591	.418	30	129,276	3.17	19	91,955	4.44	30
36	New Bedford, Mass.	331,048	1,145,395	.288	7	137,152	2.42	8	88,222	3.75	22
37	Reading, Pa.	282,263	707,344	.399	24	67,480	4.18	31	99,441	3.06	9
38	Camden, N. J.	419,283	1,008,680	.415	29	148,379	2.83	15	90,240	4.65	33
39	Dallas, Tex.	234,641	714,640	.328	11	74,230	3.16	18	82,464	2.84	8
40	Springfield, Mass.	505,700	1,386,849	.364	20	123,580	4.08	30	83,107	6.09	40
41	Wilmington, Del.	235,293	693,921	.339	14	100,947	2.33	6	85,340	2.76	7
42	Des Moines, Iowa.	495,745	1,058,440	.468	38	83,456	5.94	39	82,561	6.01	39
43	Lawrence, Mass.	293,398	884,708	.331	12	86,796	3.38	21	79,901	3.75	22
44	Tacoma, Wash.	363,142	951,484	.382	22	74,993	4.84	34	70,427	5.16	36
45	Kansas City, Kans.	253,355	604,009	.420	31	66,661	3.80	27	73,107	3.49	18

TABLE 31.—*Showing ratio of expenses of schools to total city expenses and to expenses of police department and expenses of schools per capita of population in 103 cities of 30,000 population and over, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

	Cities.	Expenses of schools.	Total city expenses.	Ratio of school expenses to total city expenses.	Rank.	Expenses of police department.	Ratio of school expenses to expenses of police department.	Rank.	Population 1908. [Revised estimate.]	Expenses of schools per capita of population.	Rank.
46	St. Joseph, Mo.	$269,754	$695,010	.388	23	$89,915	3.00	17	77,403	$3.48	17
47	Troy, N. Y.	330,346	1,111,899	.298	8	131,821	2.50	11	76,604	4.31	27
48	Utica, N. Y.	268,696	859,380	.313	10	62,914	4.27	32	70,275	3.82	24
49	Elizabeth, N. J.	212,509	612,447	.347	18	84,685	2.39	7	68,543	3.10	10
50	Schenectady, N. Y.	242,238	774,670	.312	9	89,937	2.69	13	67,205	3.61	21
51	Hoboken, N. J.	360,404	895,041	.403	25	164,438	2.22	5	68,456	3.80	23
52	Manchester, N. H.	157,726	649,375	.243	4	57,707	2.73	14	68,149	2.32	5
53	Evansville, Ind.	232,761	531,962	.438	33	67,336	3.46	22	67,721	3.44	15
54	Norfolk, Va.	144,720	754,300	.192	2	122,133	1.19	4	65,394	2.21	4
55	Wilkes-Barre, Pa.	221,600	548,227	.404	26	58,174	3.80	28	64,184	3.45	16
56	Peoria, Ill.	270,458	816,153	.331	12	107,355	2.53	12	61,691	4.39	29
57	Erie, Pa.	217,215	531,471	.409	27	54,163	4.00	29	63,905	3.40	14
58	Savannah, Ga.	124,860	512,654	.244	5	119,562	1.04	1	64,338	1.94	3
59	Oklahoma, Okla.	189,447	415,147	.456	36	26,186	7.23	41	44,779	4.23	26
60	Harrisburg, Pa.	253,430	570,699	.444	34	48,456	5.23	38	59,863	4.23	26
61	Charleston, S. C.	103,359	584,649	.177	1	95,682	1.08	3	58,257	1.78	2
62	Portland, Me.	257,563	909,186	.283	6	90,683	2.84	16	56,970	4.52	31
63	East St. Louis, Ill.	187,189	542,195	.346	17	77,254	2.42	9	52,751	3.55	20
64	Holyoke, Mass.	248,410	745,250	.333	13	69,354	3.58	23	54,701	4.54	32
65	Jacksonville, Fla.	85,088	426,583	.199	3	80,509	1.06	2	48,933	1.74	1
66	Brockton, Mass.	253,474	705,165	.360	19	67,715	3.75	25	53,443	4.75	34
67	Bayonne, N. J.	287,089	620,880	.462	37	76,122	3.77	26	50,436	5.70	38
68	Johnstown, Pa.	183,061	374,439	.490	41	37,086	4.94	35	51,948	3.53	19
69	Passaic, N. J.	209,331	444,796	.470	39	28,050	7.45	42	48,259	4.33	28
70	Wichita, Kans.	138,570	337,549	.410	28	28,975	4.78	33	44,642	3.11	11
71	Covington, Ky.	134,819	390,680	.345	16	55,060	2.45	10	52,095	2.59	6
72	Allentown, Pa.	162,076	340,929	.475	40	26,068	6.21	40	49,211	3.30	12
73	Springfield, Ill.	185,208	505,274	.366	21	50,894	3.64	24	47,471	3.90	25
74	Saginaw, Mich.	241,044	533,814	.451	35	47,528	5.07	37	49,265	4.89	35
75	Canton, Ohio	157,771	374,257	.422	32	31,566	4.99	36	47,453	3.32	13

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

76	Sioux City, Iowa	$201,948	$422,008	0.478	24	$37,573	5.37	20	45,391	$4.45	23
77	Lancaster, Pa	137,387	323,539	.424	20	29,074	4.72	16	46,131	2.96	7
78	Atlantic City, N. J	184,872	868,251	.213	3	107,485	1.73	2	42,858	4.31	19
79	Little Rock, Ark	128,597	335,139	.384	16	43,096	1.98	3	43,589	2.95	6
80	Rockford, Ill	163,741	345,805	.473	23	29,550	5.53	22	42,913	3.32	9
81	Bay City, Mich	168,253	385,289	.437	21	31,247	5.39	21	43,721	3.85	16
82	York, Pa	146,104	287,118	.509	26	23,850	6.11	25	42,591	3.43	11
83	Sacramento, Cal	220,688	642,720	.343	10	43,927	5.03	19	41,768	5.28	26
84	Chattanooga, Tenn	86,702	428,824	.202	2	62,576	1.39	1	42,525	2.04	1
85	Malden, Mass	226,888	589,740	.385	17	46,570	4.87	17	41,996	5.40	27
86	Pueblo, Colo	187,326	550,520	.304	5	49,963	3.75	12	41,405	4.53	24
87	Haverhill, Mass	184,473	548,459	.337	7	42,376	4.35	15	41,738	4.43	22
88	New Britain, Conn	143,210	389,050	.368	12	33,345	4.30	14	40,931	3.50	13
89	Topeka, Kans	201,880	381,809	.530	27	25,120	8.04	28	43,357	4.65	25
90	Davenport, Iowa	226,280	597,955	.380	15	37,303	6.07	24	41,886	5.40	27
91	Wheeling, W. Va	153,298	394,663	.388	18	47,877	3.20	8	41,116	3.73	15
92	Chester, Pa	122,064	271,574	.449	22	29,767	4.10	13	37,673	3.24	8
93	Dubuque, Iowa	116,346	339,695	.342	8	33,723	3.45	10	39,717	2.93	5
94	Woonsocket, R. I	97,801	334,744	.292	4	33,917	2.89	6	35,845	2.73	4
95	Racine, Wis	140,916	337,999	.417	19	17,756	7.92	27	35,804	3.94	17
96	Knoxville, Tenn	79,215	316,925	.150	1	38,028	2.08	4	35,641	2.23	2
97	New Castle, Pa	146,085	296,778	.492	25	22,911	6.38	26	34,867	4.19	18
98	Joliet, Ill	117,329	339,880	.345	11	36,475	3.21	9	33,659	3.48	12
99	Auburn, N. Y	123,028	381,455	.323	6	33,271	3.69	11	33,844	3.64	14
100	Taunton, Mass	142,618	415,829	.343	9	47,266	3.02	7	33,014	4.32	20
101	Oshkosh, Wis	107,605	288,184	.374	14	17,901	6.01	23	32,105	3.35	10
102	Joplin, Mo	120,347	226,893	.530	28	24,628	4.89	18	27,278	4.41	21
103	Newport, Ky	80,409	216,928	.371	13	33,873	2.37	5	29,926	2.69	3

TABLE 32.—*Showing average annual cost per pupil, based on enrollment, of instruction, operation, and maintenance of elementary schools, including kindergartens, and of secondary schools and the relation of these costs to each other, in a selected list of cities, 1909.*

		Fiscal year ended—	Elementary schools.				Secondary schools.				Cost per pupil—Ratio of elementary schools to secondary schools.	Rank.
			Expenses.	Enrollment.	Cost per pupil.	Rank, cost per pupil.	Expenses.	Enrollment.	Cost per pupil.	Rank, cost per pupil.		
	Group I: Median				$26.54	5+			$64.39	5+	2.27	5+
	Middle 50 per cents				24.34 to 27.65	4 to 7			57.99 to 71.32	4 to 7	1.965 to 2.65	3 to 7+
	Group II: Median				24.29	8			48.50	8	1.84	8
	Middle 50 per cents				21.745 to 25.775	5 to 11			40.405 to 53.935	5 to 11	1.71 to 2.34	6 to 12+
	Group III: Median				21.60	14			49.56	14	2.27	14
	Middle 50 per cents				19.43 to 25.50	8 to 20			43.875 to 54.91	8 to 20	1.89 to 2.775	8 to 20+
	Group IV: Median				21.71	9			39.98	9	1.90	7
	Middle 50 per cents				18.55 to 23.22	5 to 13			35.70 to 46.46	5 to 13	1.72 to 2.465	4 to 10+
	GROUP I.—CITIES HAVING A POPULATION OF 300,000 AND OVER IN 1910.											
1	Chicago, Ill	June 30, 1909	$7,360,704	275,062	$26.77	6	$1,073,247	16,616	$64.65	6	2.41	7
2	St. Louis, Mo	do	1,906,210	82,324	23.17	3	407,571	4,569	89.20	10	3.85	9
4	Baltimore, Md	Dec. 31, 1908	1,429,100	76,416	18.71	1	259,859	3,569	72.82	8	3.90	10
5	Detroit, Mich	June 30, 1909	1,299,280	49,394	26.31	5	297,035	5,189	57.24	3	2.18	4
6	Buffalo, N. Y	do	1,299,344	57,662	22.51	2	198,330	4,362	45.50	1	2.02	3
7	San Francisco, Cal	do	1,332,016	39,717	33.57	10	206,526	3,224	64.13	5	1.91	2
9	Newark, N. J	do	1,516,593	53,844	28.19	8	155,729	1,912	81.55	9	2.89	8
11	Washington, D. C	do	1,534,037	48,968	31.32	9	386,116	5,525	69.82	7	2.23	5
12	Los Angeles, Cal	do	969,739	38,234	25.40	4	256,105	4,356	58.75	4	2.31	6
13	Minneapolis, Minn	Dec. 31, 1908	1,091,649	40,326	27.11	7	251,518	5,311	47.38	2	1.75	1

GROUP II.—CITIES HAVING A POPULATION OF 100,000 TO 300,000 IN 1910.

16	St. Paul, Minn	Dec. 31, 1908	$596,202	25,761	$23.13	6	$141,532	2,525	$55.92	12	2.42	12
17	Portland, Oreg	do	527,444	21,667	24.37	8	82,954	2,028	40.90	5	1.68	3
20	Oakland, Cal	June 30, 1909	462,936	14,933	31.10	15	98,017	1,847	52.95	11	1.70	4
21	Syracuse, N. Y	Dec. 31, 1908	420,148	19,968	21.00	4	106,611	2,568	41.51	6	1.98	9
23	Birmingham, Ala	June 30, 1909	114,305	8,404	13.62	1	34,448	1,029	33.48	3	2.47	13
24	Memphis, Tenn	do	246,388	13,192	18.70	3	22,909	884	25.89	2	1.39	1
25	Scranton, Pa	do	395,503	17,038	23.30	9	101,760	1,391	73.30	15	3.15	15
26	Paterson, N. J	do	426,816	17,752	23.99	7	61,763	1,549	39.91	4	1.66	2
27	Omaha, Nebr	Dec. 31, 1908	417,674	16,580	25.20	11	93,587	2,051	45.72	7	1.81	7
28	Grand Rapids, Mich	June 30, 1909	410,329	13,923	29.49	14	92,513	1,811	51.15	9	1.73	6
29	Nashville, Tenn	Dec. 31, 1908	230,939	15,296	15.12	2	26,909	1,041	25.91	1	1.72	5
30	Lowell, Mass	do	321,391	12,210	26.35	12	58,748	1,214	48.39	8	1.84	8
31	Cambridge, Mass	Mar. 31, 1909	346,102	15,399	22.49	5	120,712	1,736	69.40	14	3.08	14
32	Spokane, Wash	June 30, 1909	390,734	13,836	28.40	13	119,425	1,860	64.21	13	2.26	11
33	Albany, N. Y	Dec. 31, 1908	283,150	11,331	25.13	10	60,669	1,151	52.80	10	2.10	10

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910.

35	Trenton, N. J	June 30, 1909	$310,379	12,058	$25.70	21	$55,653	808	$68.87	24	2.68	19
37	Reading, Pa	Feb. 16, 1909	219,690	10,208	21.60	14	44,706	904	49.47	15	2.29	16
38	Camden, N. J	June 30, 1909	352,139	13,505	26.10	23	45,921	547	83.93	25	3.22	24
39	Dallas, Tex	Apr. 30, 1909	169,892	10,908	15.60	2	52,239	994	52.56	19	3.37	26
41	Wilmington, Del	June 30, 1909	185,346	9,879	18.76	6	38,994	1,087	35.84	3	1.91	7
42	Des Moines, Iowa	do	369,749	14,050	26.30	24	95,656	1,857	51.51	18	1.96	8
43	Lawrence, Mass	Dec. 31, 1908	226,178	7,515	30.08	27	36,556	651	56.20	22	1.87	6
44	Tacoma, Wash	June 30, 1909	257,829	10,161	25.30	20	81,634	1,791	45.60	11	1.80	3
45	Kansas City, Kans	do	173,902	9,620	18.05	4	60,779	1,186	51.40	17	2.86	22
48	Utica, N. Y	Dec. 31, 1908	207,405	9,357	22.15	17	38,737	763	50.78	16	2.30	17
49	Elizabeth, N. J	June 30, 1909	160,681	8,156	19.70	8	26,936	602	44.76	10	2.27	14
50	Schenectady, N. Y	Dec. 31, 1908	191,313	9,103	21.02	11	35,987	764	47.11	12	2.24	13
51	Hoboken, N. J	June 30, 1909	287,446	9,864	29.15	25	38,630	396	97.55	27	3.35	25
52	Manchester, N. H	Dec. 31, 1908	125,530	5,813	21.62	15	23,250	578	40.23	4	1.86	5
55	Wilkes-Barre, Pa	June 7, 1909	176,965	9,243	19.16	7	28,944	1,136	25.47	1	1.33	1
56	Peoria, Ill	June 30, 1909	218,850	8,402	26.05	22	29,807	617	48.26	13	1.85	4
57	Erie, Pa	June 7, 1909	150,859	7,252	20.82	10	38,265	874	43.79	7	2.11	11
58	Savannah, Ga	Dec. 31, 1908	98,394	7,181	13.71	1	17,957	444	40.46	5	2.95	23
59	Oklahoma, Okla	June 30, 1909	140,003	7,583	18.47	5	35,935	856	42.00	6	2.28	15
60	Harrisburg, Pa	June 1, 1909	183,864	9,148	20.10	9	49,928	902	55.35	21	2.76	20

TABLE 32.—*Showing average annual cost per pupil, based on enrollment, of instruction, operation, and maintenance of elementary schools, including kindergartens, and of secondary schools and the relation of these costs to each other, in a selected list of cities, 1909*—Continued.

GROUP III.—CITIES HAVING A POPULATION OF 50,000 TO 100,000 IN 1910—Continued.

		Fiscal year ended—	Elementary schools.				Secondary schools.				Cost per pupil—Ratio of elementary schools to secondary schools.	Rank.
			Expenses.	Enrollment.	Cost per pupil.	Rank, cost per pupil.	Expenses.	Enrollment.	Cost per pupil.	Rank, cost per pupil.		
66	East St. Louis, Ill	June 30, 1909	$150,060	$7,017	$21.38	18	$21,315	430	$49.60	14	2.32	18
67	Bayonne, N. J	do	245,017	8,367	29.28	26	24,126	388	62.29	20	2.13	12
68	Johnstown, Pa	June 7, 1909	141,030	6,367	22.14	16	32,257	524	61.58	23	2.79	21
69	Passaic, N. J	June 30, 1909	161,284	7,244	22.28	19	31,406	349	90.02	26	4.04	27
70	Wichita, Kans	do	108,014	6,650	16.26	3	20,960	757	27.70	2	1.71	2
71	Covington, Ky	do	107,143	4,796	22.32	18	15,809	355	44.57	9	2.00	9
72	Allentown, Pa	do	125,997	5,917	21.30	12	20,914	475	44.04	8	2.07	10

GROUP IV.—CITIES HAVING A POPULATION OF 30,000 TO 50,000 IN 1910.

		Fiscal year ended—	Elementary schools.				Secondary schools.				Cost per pupil—Ratio of elementary schools to secondary schools.	Rank.
			Expenses.	Enrollment.	Cost per pupil.	Rank, cost per pupil.	Expenses.	Enrollment.	Cost per pupil.	Rank, cost per pupil.		
76	Sioux City, Iowa	June 30, 1909	$160,777	7,035	$22.84	12	$28,762	690	$41.72	10	1.83	6
77	Lancaster, Pa	June 1, 1909	100,269	5,381	18.65	7	26,083	602	43.34	11	2.33	9
78	Atlantic City, N. J	Dec. 31, 1908	146,379	6,560	22.33	11	29,607	450	65.80	16	2.95	14
79	Little Rock, Ark	June 30, 1909	94,656	5,626	16.83	4	19,026	732	25.95	1	1.54	2
81	Bay City, Mich	do	122,539	5,671	21.62	9	35,533	762	46.63	14	2.16	8
82	York, Pa	June 10, 1909	112,439	6,060	18.55	5	21,470	609	35.27	4	1.90	7
85	Malden, Mass	Dec. 31, 1908	159,706	6,603	24.20	17	54,028	920	58.73	15	2.43	10
86	Pueblo, Colo	June 30, 1909	138,833	7,238	19.17	8	34,726	517	67.19	17	3.50	15
87	Haverhill, Mass	Dec. 31, 1908	135,472	5,317	26.12	16	30,105	669	44.95	12	1.72	4
88	New Britain, Conn	Mar. 31, 1909	97,356	6,546	14.86	2	20,801	557	37.37	6	2.53	12
89	Topeka, Kans	June 30, 1909	150,229	5,929	25.33	15	43,534	1,216	35.70	5	1.41	1
92	Chester, Pa	June 7, 1909	99,984	4,510	22.19	10	14,098	364	38.75	7	1.74	5
93	Dubuque, Iowa	June 30, 1909	89,376	3,550	25.20	14	20,882	533	39.18	8	1.56	3
95	Racine, Wis	Dec. 31, 1908	105,778	5,686	18.60	6	26,060	561	46.46	13	2.50	11
96	Knoxville, Tenn	June 23, 1909	60,519	5,450	11.12	1	13,580	461	29.48	3	2.66	13
97	Newcastle, Pa	June 4, 1909	116,173	4,997	23.22	13	20,799	520	39.98	9	1.72	4
102	Joplin, Mo	June 30, 1909	96,816	5,979	16.20	3	16,463	587	27.96	2	1.72	4

BULLETIN OF THE BUREAU OF EDUCATION.

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Jan 9, 1915

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AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS

PAPERS READ AT THE SECOND ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF AGRICULTURAL TEACHING
COLUMBUS, OHIO, NOVEMBER 14, 1911

DEPARTMENT OF THE INTERIOR

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LETTER OF TRANSMITTAL.

Department of the Interior,
Bureau of Education,
Washington, February 2, 1912.

Sir: Education in and through agriculture is attracting the attention and interest of teachers in schools of all grades and of many people, both in country and in city. Only within recent years have agriculture and allied subjects come to be an important part of the courses of study in elementary and secondary schools and in normal schools whose purpose and function it is to prepare teachers for these lower schools. For this reason there is still much uncertainty as to what and how much of these subjects should be taught, how the matter selected should be arranged, what methods of teaching should be used, and what should be the organization and support of the schools doing this work. Hence, any contribution toward the answer of these questions is welcomed by teachers, school officers, legislators, and people who have children to educate and who contribute to the support of the schools.

The manuscript herewith submitted consists of papers read before the American Association for the Advancement of Agricultural Teaching at its second annual meeting, Columbus, Ohio, November, 1911. This association is composed of persons engaged in agricultural education in American colleges, normal schools, high schools, elementary schools, and special schools of agriculture. Its membership includes able men and women in all parts of the United States who have acquaintance with the present usage and the needs of such education in all sections. These papers constitute a valuable contribution to the solution of several problems of agricultural education, especially in the secondary schools, and I therefore recommend that they be published as a bulletin of the Bureau of Education.

Very respectfully,

P. P. Claxton,
Commissioner.

The Secretary of the Interior.

AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS.

PAPERS READ AT THE SECOND ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, COLUMBUS, OHIO, NOVEMBER 14, 1911.

I. ESSENTIALS IN A STATE SYSTEM OF AGRICULTURAL EDUCATION.

By F. W. Howe,

Specialist in Agriculture, State Department of Education, Albany, N. Y.

The lapse of 54 years since the founding of the first American agricultural college should have given time enough for the formulation of some definite, integrated scheme of agricultural education that could merit and enlist the intelligent support of the American people. It has taken the larger fraction of that period, however, to establish the work of the agricultural colleges in general public estimation, and some, even among the leaders, have been satisfied with this measure of accomplishment, and have been inclined to regard it as the consummation of the development of an ideal system of agricultural education.

Certain of them, however, saw far beyond this—for example, read President James's recent tribute to the far-seeing statesmanship of Prof. J. B. Turner—yet some of the lesser folk, of the common people, have been the ones to encourage and develop the demand for something broader than was first contemplated. As with the older institutions of traditional type, the seed planted by the colleges of agriculture has fruited in the far-spread sentiment that education for efficiency is the right of all the people. And the recognized dependence of the national welfare upon agricultural prosperity has reenforced the demand that special educational provision shall be made for instruction in agriculture.

So we have seen numerous significant, if not scientific, attempts to bring this to pass. In certain States we have seen the teaching of agriculture required by law in all the public schools, even before any teaching standards had been erected or any requirement made that teachers should be examined in the subject. We have seen special schools of agriculture spring full fledged from the fiat of legislatures, without regard to the relation of these establishments to the colleges or to the general public schools. We have seen private schools and State normal schools offering agricultural courses in the same independent fashion. We have seen congressional district, and judicial district, and indeterminate district schemes of distribution of such schools. We have seen abandoned county courthouses and old academy buildings take on a new life as the home of these promising new schools; and we have seen all sorts and degrees of State-aided schemes brought forward for their support.

We may consider these sporadic developments unpedagogical, irrational, or even as symptoms of sheer political pull or demagogic ambition; but we must admit that their ultimate success depends upon the fact that the people of the several States have set their minds on having an agricultural education that shall be really democratic, in the sense that it is open to every boy and girl who wants it, regardless of the distance of his home from the State agricultural college. Just as the agricultural colleges have fought their hardest battle to overcome the inertia and ignorance of farmers themselves, in like manner those who are interested in the real education of these farmers' children may have to resist and overcome influences that would now restrict the opportunities of education. The very excellence of the teaching of the agricultural colleges has developed the demand for more of this type of instruction than can be given effectively in centralized institutions. The colleges may yet "head up" this movement for broader educational opportunity, but they can not "head off" the movement. And if this trend has not yet shaped itself definitely within the lines of a pedagogic and rational system, at least the development has gone far enough to supply the factors entering into the outline of such a system.

If these observations have served a useful purpose in introducing my theme, I may be justified now in plunging into it at once, and my first proposition is this:

The State scheme of education in agriculture should be definitely and intimately related to the State's general system of education.

It may seem easy now to assent to that proposition, but it was only five years ago that the writer found occasion to say in a published article that the usual agricultural college stood as far apart from the recognized system of public education as do the private colleges or the State reform schools.

If, however, we are now agreed that instruction in agriculture is a legitimate and commendable concern of general public education, certain corollaries which naturally follow from the fundamental proposition deserve special statement, as follows:

1. The State agricultural college should be recognized as an important and necessary part of the general educational mechanism of the State.
2. Preparation for entrance upon the courses offered in the agricultural college should be a recognized function of the public high school.
3. The high-school courses in agriculture should present a broadly cultural as well as specifically vocational character.
4. These courses should be projected upon a definite plan of State aid and State supervision.
5. General but none the less distinctive teaching of agriculture in the seventh and eighth grades should precede and prepare for these courses.

Space will permit but the briefest comment as to the significance and validity of the foregoing statements, considered in the direct order.

(1) If the State agricultural college is not an organic part of the State university—and some of the oldest and best of them did not so originate—at least it should be recognized that the best work of these schools is of tertiary rather than merely of secondary grade and that it stands on equal footing with the engineering, scientific, or other professional departments of a well-balanced university system.

It is worth while to call attention to the fact that the original concept of the land-grant college was that of an industrial university. The isolated colleges of this type that have developed harmonious departments of literature, science, arts, history, economics, and language, as well as engineering, forestry, home economics, and agriculture, are still within the scope of the first intention. Though generally so called, these institutions are not exclusively colleges of agriculture, a point that universities as well as the common people do well to remember.

(2) If it is, then, rational and commendable for the public high schools to offer courses preparatory to colleges of law, medicine, science, education, and the liberal arts, it is obviously of equal sanity of thought and procedure that they should also provide courses that lead to the practical arts, either in a higher school or in real vocational life. The obligation to do this is the more urgent in view of the relatively small number of high-school graduates who enter the more learned callings.

(3) But if the high school is to make such offerings as a part of its general educative function, it must bring them into some articulate relation with the material of teaching common to all the other courses. Stated differently, it is a violation of sound pedagogic

principles to "segregate" agricultural students in studies that ought to be pursued in common with other students.

The high-school student can no longer master all the subjects embraced in the modern curriculum; and even the weakest high school should not oblige or expect each of its students to cover the subjects studied by every other student in order to graduate. Furthermore, the agricultural student needs association and coeducation with future citizens who are to devote themselves to other occupations than farming. This assures the safest condition for developing sound ideals of civic responsibilities and of personal culture. In truth, the education that most of us must get for vocation holds in itself the surest, most nearly permanent cultural possibilities. Culture is the spring whose current turns the mill of daily life, while at the same time preserving the beauty of the landscape which life surveys through its windows and into which it walks at eventide.

(4) But a high-school course in agriculture that is both broadly cultural and vocationally adequate can not be properly sustained "in the present state of the art" without assistance from the State as a whole. Efficient teachers of agriculture cost more than efficient teachers of Latin or algebra, even though not as yet so well trained in the theory of teaching their specialty. The new subjects, slow in coming to their proper place in the modern curriculum, must now have unusual assistance in promptly developing their important functions. And the sufficient justification for special State aid in money and supervision lies in the fact that the productive skill and habit developed in the agricultural courses accrue to the advantage of the whole State in a much more direct and traceable way than is shown by the training for any of the older professions.

As to the best way through which financial aid may come to the schools and as to the best proportion of general to technical or vocational studies in the course, local conditions and opinions will vary. So far as any generalization, based upon the actual practice in respect to these points, can yet be made, it would appear that the more eastern States in this country show a tendency to exact a larger proportion of the student's time for technical studies, while conferring a relatively smaller amount of financial aid from the State treasury. There appears also to be a tendency in the Middle Western States to limit the number of schools enjoying this benefit much more definitely than in the Eastern States. Thus, upon the first point mentioned, the report of the recent Illinois Educational Commission recommends that only one-fourth of the course be given to agriculture or other vocational subjects. Missouri and Nebraska and probably a number of other Western States require the teaching of agriculture with State aid through only one or two years of the high-school course.

In contrast with these, New York requires five-twelfths of the time to be devoted to vocational work through four years, and Massachusetts requires practically two-thirds of the time. The latter State also insists that one-fourth of the time given to agriculture shall be devoted to practical work done at the home under direction of the special teacher. No Massachusetts high school can receive State aid and approval for its agricultural course except by carrying out this requirement, which may be regarded as a limiting factor in determining the number of schools that will elect to take advantage of it, for it is intended that "when conflict is unavoidable, or when continuous application for a number of days to his productive farming projects becomes necessary, all else must yield to the student's agricultural instruction, no matter what the cost for the time being to his other studies."

Considering now the second point of comparison between eastern and western schools, Minnesota definitely limits the number of schools receiving State aid under the Putnam law to 10 additions to the list in any biennium. Under this provision 30 schools now receive State aid to a maximum of $2,500 annually under the Putnam act, and 55 schools receive $1,000 each under the Benson-Lee act. A somewhat similar limitation prevails in Louisiana and Virginia, which are neither Western nor Eastern States in the usual implication of those terms. North Dakota limits State aid, amounting to a maximum of $2,500 annually, to five high schools the first year, and to five additional schools in any subsequent period of two years.

Turning again to the Eastern States, New York offers but $500 annually to schools employing one vocational teacher of "agriculture, mechanic arts, and home making," though this proposition is wide open to every high school in the State that can enlist 25 approved students in the course. Massachusetts makes no limitation upon the number of schools, except by the curricular provisions previously noted, and by fixing the amount of its total appropriation for vocational instruction at $10,000, a sum which is available for paying two-thirds of the salaries of instructors in agricultural departments of high schools. Maine gives State aid in the proportion of two-thirds of the local expenditures for teaching agriculture, though the absolute amount paid must not exceed $500 annually to any school.

This hasty survey would thus seem to justify the statement that in the Eastern States generally, where agriculture is not commonly considered so dominant an industrial interest as in the West, the proportion of school time exacted for the study of agriculture is greater than in the Western States, while the amount of State aid offered is notably less; and further, that in the Eastern States there is no definite numerical limitation of the number of schools entitled to State aid, while this limitation appears to be typical of the western plan.

Possibly this rather unexpected conclusion from the comparison made would break down under closer analysis; but it would seem at least to provoke further investigation as to the historic, educational, social, and economic factors involved in an explanation of the two situations compared.

(5) In further comment upon the suggestion that high-school courses should be preceded by agricultural teaching in the lower grades, it may be said that this proposition is now generally conceded. My own point is that this teaching ought to be recognized as an essential step in the practical development of a standard system of agricultural education. It has been practically admitted for a number of years now that the up-to-date high school, at least in the more rural sections, ought to give a one-year general course in textbook agriculture for the sake of its cultural and informational value, if for no other reasons.

So much surely ought to be done; but no high school that means to live up to its full duty in teaching agriculture from the vocational viewpoint can spare the time in a four-year course for a mere general or academic study of agriculture. The logical place for such a course is in the seventh and eighth grades, when the pupil is naturally eager to take up a new textbook on a new theme, enlivened perhaps by occasional demonstrations and observation trips to real farms, and where the generalized, descriptive study of the business of agriculture and its relations to other great world industries will constitute an apperceptional background for the more specialized instruction that awaits him in the high-school course.

To defer this general but elemental study of agriculture to the later years of the course contravenes every consideration of true pedagogy, and contributes much to the lamentable tendency of pupils to "eliminate" themselves from the public school before they have had a fair chance to appreciate the meaning of real high-school work. Much might be said, also, upon the value of this elementary study of agriculture, considered as a preparation for high-school science study.

The development of my theme has thus far pertained chiefly to the general public high schools as the educational unit that needs to be considered next after the agricultural college in the fashioning of a State system of agricultural education. There remain for brief attention certain *scholia*, more or less important, that belong to other phases of the subject. These may now be stated.

(*a*) *To make agricultural teaching effective, there must be special provision for the adequate training of teachers.*

Possibly this is a matter of less consequence in relation to college instruction, where it may be assumed that persistent students will gain information in spite of the poor methods of presentation that are all too common, but it has imperative importance in the high-school field and lower. I have no time or disposition to argue this. There are no "born" teachers of agriculture, or any other subject, who need not to be born again through the spirit of true, conscious insight and understanding of the laws of teaching. If it were not so, then we have foolishly spent millions of money in the support of normal-school instruction in the Nation. But not even a referendum vote to abolish all normal schools could invalidate the fact of the need of special training for the art of teaching. Agricultural instruction of any grade can not afford to ignore the requirements which that fact imposes. There was need of the organization of the American Association for the Advancement of Agricultural Teaching.

The State normal schools themselves, to which we naturally look for this training, are beginning to offer it. The quality of the training will improve with larger experience and with adequate technical information in the science and business of agriculture. The agricultural colleges constitute another source from which this instruction should be expected, though they have been slow, if not reluctant, to provide it. The special secondary schools of agriculture that have been established in many States should also do much to prepare experienced public-school teachers to give instruction in the new subject. The general public high school that offers both agricultural and teachers' training courses can likewise do much to better the instruction in lower schools, especially in the rural districts.

The remark which seems important in this connection is that no one State educational institution can supply the training needed to meet pressing demands of the present and the future, and no single institution should attempt to arrogate to itself such a prerogative. The land-grant colleges have no monopoly of the instrumentalities of agricultural education. It is easily conceivable that in many States the wholesome rivalry of an independent institution of collegiate rank that took some pains to secure teachers who should know teaching as well as agriculture, and whose work must depend for support upon its intrinsic excellence rather than upon fixed appropriations from the State treasury—it is possible, I say, that the presence and influence of such a school might be a distinct blessing to the work of certain State institutions. The time is at hand when we should expect large endowments from private sources to complement the service of State and national establishments for promoting education in agriculture, just as we have seen the general education system of State and Nation preceded, and then followed, by private foundations for educational purposes. The disposition to put all responsibility for educational betterment upon the resources of the public treasury is no certain evidence of popular appreciation of educational requirements. The real advances in all national development come from special or individual initiative.

(*b*) *To improve general agricultural teaching in the State there ought to be a State association of all agricultural teachers and supervisors.*

This State association would bring to its members the conceded advantages of like cooperation in other lines of teaching. The educational powers that be often manifest a tendency to discourage the formation of new organizations. It is, however, distinctly a matter for the beneficiaries to settle for themselves.

(*c*) *A State organ of publicity and professional improvement is a proper outgrowth of such an organization.*

It should serve as a clearing house of information and suggestion for all grades of agricultural teaching without advertising the special merits of any particular school or person.

(*d*) *Partly outside the immediate local functions of the several schools, but intimately and logically connected with them, is the field of certain lines of so-called extension instruction.*

These need not be now specified, but it is pertinent to say that here again the field does not belong to any one institution or agency. The local high school may offer such extension work in a series of winter monthly meetings for farmers or otherwise carry on this instruction, perhaps even more effecively than it could be done by a remote institution. Of course the local school should utilize to the utmost any assistance it can secure from general agencies for agricultural betterment—the State farmers' institute service, the State grange, the State departments or boards of agriculture and of education, the faculty of the State college of agriculture and of other teaching institutions, and the staff of the experiment station—but it should preeminently develop the interest and abilities of the farmers of its own community. The real success of agricultural teaching within and without the school building will be measured by the extent to which the instruction is adapted to local conditions and possibilities and gets itself realized in the essential betterment of practice on the home farm.

(*e*) In addition to furnishing these intimate and personal forms of extension instruction, *an ideal system of agricultural education will also provide some systematic type of correspondence teaching in agriculture.*

This is a field of possibility that is yet by no means fully worked, and its special virtue consists in the emphasis which it places on the conception of education as a lifelong process, never completed at any age. It is a form of service that can be particularly helpful to the experienced teacher who knows as yet but little scientific agriculture and to the agricultural graduate who knows as yet but little of the science and the art of teaching.

(*f*) *To give unity of purpose in the interaction of all these agencies for agricultural education, there ought to be an annual State conference.*

This conference should bring together perhaps not the actual teachers, who ought to have their own special meetings, but the leaders of the State who form public opinion in developing the trunk lines of State progress. Possibly there should be a permanent State commission on agricultural education that should serve to represent and harmonize the various interests concerned in the agricultural and educational development of the State's resources. The influence of some such agency is probably the only efficient safeguard against ill-considered legislative action on these matters.

(*g*) In this essay to set forth the outlines of a State system of agricultural education, I should include a final proposition: ***Additional Federal aid should still be given to the several States in promoting the efficiency of agricultural education.***

Neither education nor agriculture have exhausted their rightful claims upon the fostering care of the General Government. Legislation looking to these ends, frequently proposed in recent years but still deferred, is yet needed to perfect the development of a measurably complete system of agricultural education. So long as public money is still not wanting for the pageantry of war on land and sea the advocates of real national progress will be justified in continuing to press these claims to final recognition.

In the meantime, as well as afterwards, a great advantage would come to the teaching of agriculture through all grades and forms of instruction if the department of agricultural education in the Experiment Station Record could be expanded into, or be supplemented by, a national organ of representation for the important interests involved. Excellent as it is, the clearing-house function of the Office of Experiment Stations in relation to agricultural education is not adequate to the magnitude and dignity of the development which this interest has already attained. If the influence of this organization and of others of like interest be unable to bring about the establishment of such additional means of public discussion and representation, through appropriate legislation and requisite appropriations, then, as a nation-wide association of agricultural educators, we shall face the duty of devising and conducting such an organ directly through our own effort. There should be support enough to assure success to such an effort.

II. THE NEED FOR RELIABLE SCIENTIFIC DATA REGARDING SOCIAL AND ECONOMIC CONDITIONS IN RURAL COMMUNITIES.

By E. C. Higbie,
Superintendent School of Agriculture, Morris, Minn.

The objects of this association are to promote and to increase the efficiency of agricultural teaching. The value of agricultural instruction is now seriously questioned only by those who need it most. Some ignorant, slipshod farmers, together with a small self-confident, successful contingent, are practically the only ones who see no place for the new work. President Butterfield generalizes the rural problem thus: "To maintain upon our land a class of people whose status in our society fairly represents American ideals, industrial, political, social, and ethical." Any one in touch with conditions at first hand realizes that the attainment of this purpose is a task of the greatest magnitude.

In the solution of the rural problem the first need is a clear understanding of rural conditions. This comes only after the intelligent consideration of details. My thesis is that we do not have the reliable data at hand to know fully how to proceed. If the problem were uniform the work would be easier; but every State, every county, and almost every locality has its own peculiar manifestations.

This diversity of the problem is accompanied by an equal if not greater diversity of opinion. Recently I sent out a questionnaire to try to discover just what leaders in my section of the State were thinking. I was after opinion and I got it. It is true that there was some agreement, but in certain phases the differences equaled the number answering. This is an age of opinion, sometimes sympathetic and rational, often not. It is characteristic of the day that a large per cent of the people whom we meet will talk fluently and knowingly upon rural life with a strong assurance that they could give solutions for all of its problems.

These circumstances emphasize the need of reliable scientific data, for which there are at present two or three sources. As far as it goes, the census is helpful for beginnings and for general conclusions. The report of the Country Life Commission has served a splendid purpose in directing the attention of people, in a large way, to the problem, but it is interesting to note that their recommendation of a careful survey has gone the way of many of their other conclusions. A third source of information lies in the large number of articles that have appeared in newspapers, magazines, and reports during the last four years. Most of these are general and sometimes sensational in character, but often one finds discussions and descriptions of real value.

THE NEED FOR SCIENTIFIC METHOD.

What strikes one most is that all the information which we have is long-distance and general. We have been superficial, opinionated, and unscientific long enough. Now we need facts. We have about passed through the period of publicity. Politicians, newspapers, and magazines have performed their function of calling attention to the problem. In order to make the best progress, we are in need of a new spirit in investigation. The high schools have done a real service to education in resisting uniformity. In Minnesota they are absolutely free to-day to develop courses in line with the needs of the communities, and this does not apply simply to occupational differences, but also to differing phases of work in the same occupation. One agricultural community may need a considerably different kind of instruction from its neighboring community. To determine the kind of course, to know what and how to teach, local data are necessary.

The schools in all their activities are to be the real forces for solving rural problems. Those responsible for their development must know rural conditions, and cold, wet, hard facts must be the basis upon which to build.

If the farmer is hard to investigate—and we shouldn't respect him if he were not—he is often still harder to convince; but he is vulnerable when in the face of data that are correct and to the point. The hard facts of life make him suspicious of general statements—so many times his own experience flatly contradicts the generalization. I am indebted to Prof. Andrew Boss for the following statement, which so well illustrates what I am trying to say:

> Since 1902 the Minnesota Experiment Station has performed a valuable service in securing data on the cost of producing farm crops in Minnesota. The method followed has been to employ route statisticians who are stationed in the representative agricultural districts and who visit the farms daily, getting a complete record of the equipment, labor, products, and methods of operations, and the disposition of the crops. Reports are made to the central office where the data are brought together in comparative form, in this way giving a fairly good representation of conditions which apply to the whole State.
>
> The results of the investigations bring out clearly the fact that accurate information on the economic or business side of farming is badly needed. Bad practices are followed for the simple reason that the farmers can not determine which are the paying enterprises. Minnesota Bulletin No. 117 gives the cost of producing various cereal crops and discusses different phases of the farm business. Comparison of the cost tables included shows the impossibility of making a satisfactory profit from producing low-valued crops on high-priced land, and emphasizes the importance of not only highly intensified production, but of economy in the operation of the farm.
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> In a study of the cost of milk production (Minnesota Bulletin No. 124), it is found that Minnesota farmers made a very small profit, if any, on their cows. To pay for the cost of feed, labor in caring for them, and interest on the investment, a cow must give

5,000 pounds or more of milk a year, and produce at least 225 to 240 pounds of butter fat. Better cows give higher profits and will replace the poorer ones, as soon as the farmers know the facts in the case. While the general practice of farmers is probably nearly correct, it is impossible to determine the profitable enterprises or methods of farming without the exact data and an analysis of the farmer's business, and the data secured through the investigations of the experiment stations are being largely used in many places as basic facts in determining farm profits.

SOME QUESTIONS FOR THE LOCAL SURVEY.

To suggest what may or should be done by men in charge of public schools let me outline a possible case. A school happens to be located in an uninteresting, commonplace part of the State. Influences are stirring which demand a redirected course. All at once a new and heavy task is placed upon the man in charge. He has read, perhaps, much that has been written about the new agriculture and its possibilities, but the best thing for him to do is to go out and get acquainted with his field. He should undertake to find out answers to the following questions:

1. How many students has he who have come direct from the farm?
2. What per cent of his graduates came direct from the farm?
3. How many have returned to the farm?
4. What effect has this upon rural leadership?
5. How many of the rural teachers in his area were trained in his school?
6. What are they teaching?
7. How much education do average farm boys and girls get?
8. Wherein does it lack in training them for their particular work?
9. What kind of homes do they live in?
10. How many hours a day and days in a year do they work at farm labor?
11. What particular advantages and disadvantages do they have?
12. What are their neighborhood pastimes?
13. Do they put thought into their labor, or is it largely routine?
14. What proportion of the farmers are tenants?
15. How many are carrying mortgages? Why?
16. What is the average size of farms?
17. What method of farming is most in evidence?
18. What kinds of books do farmers keep?
19. Are they fairly paid for their work?

I am suggesting such a survey in order to get the leaders in real touch with the problem. He will be a dullard indeed who can not see a big field opening up which will be its own cause for redirected energies.

In the case just outlined I have suggested a detailed survey to be carried out by the local superintendent of schools. Now I want to suggest a larger field with the county as the area considered.

A definite plan should be laid out with the idea of learning all the main facts. As one gets into the investigation, various lines will suggest themselves. Maps and charts should be made showing graphically drainage, cultivated areas, grain products, live stock, creameries, schoolhouses, churches, etc. One of the first studies should involve the efficiency of the school system and its relation to the problem. This should be followed with social and economic investigations. A survey of farm buildings, together with sanitary conditions in house, dairy, wells, etc., should be included. Farming methods, marketing facilities, roads, labor, organizations, should receive attention. An important phase that needs serious consideration is whether the farmer is really making a fair wage. Long hours, child labor, home products, lack of account keeping, horse labor. all complicate this particular investigation.

It will be objected that such studies will not be of sufficient value for their trouble and expense. I believe that actual touch with the problem will give a new impetus to the workers that will result in much more effective organization and adaptation to the needs. A large portion of the data can be obtained through county officers, physicians, bankers, and others in touch with the county. Still more can be obtained by visitation and inquiry. A series of afternoon and evening meetings in the schoolhouses will be mutually helpful.

I am not certain that such surveys will be carried on very extensively, but I am certain that they would be very valuable and that the agencies doing the work would begin to see the solution to some of the problems now confronting us. If we are going to be leaders in rural betterment, we have got to be in real touch with the actual work, and the prosecution of such surveys would certainly acquaint us with the field. As I see it, the whole matter merely reduces the problem to scientific, accurate statement, which means, of course, a long step toward the solution.

Briefly to summarize my proposition, if we are to get at the heart of the problem and develop effective instruction, we must realize its diversity, we must have close-range data, we must gain a sympathetic acquaintance with the men and conditions of the farm.

III. THE PROPER EQUIPMENT OF AN AGRICULTURAL HIGH SCHOOL.

By D. O. Barto,

Instructor in Secondary School Agriculture, University of Illinois, Urbana.

The agricultural studies of such a high school as I understand we are to consider under this topic may be classified under these divisions:

1. A study of the soil.
2. A study of the plant and field-crop production.
3. A study of garden and orchard crops.
4. Studies in the breeding, feeding, and care of domestic animals.
5. A study of the principles and methods of dairying.
6. A study of farm mechanics.
7. A study of landscape architecture.

Possibly few, if any, high schools will feel at the outset that they can compass this whole field of agricultural work, but there is nothing named in this list of divisions that is not of vital importance to the business of farming. Indeed, the list of subjects that might properly be included in the agricultural training of the boy who is to be a farmer is far from complete.

Since wise management of the soil is fundamental to every form of successful agriculture, I would place special emphasis on the work of this division of the course to the end that those who till the soil shall understand its physical and (to some extent) its chemical composition, and shall know how and why soils differ from each other, as well as the way in which these soils are classified and named. They should be taught the important characteristics of these soils and the best methods of handling them to secure the most satisfactory results in growing crops.

This leads up to the immensely interesting and important studies of moisture relations of the soil and the means of controlling them; aeration of the soil, how it is secured and why it is necessary; and soil temperature, and what the farmer may do to influence this imimportant factor in crop production.

The study of soils furnishes work in the laboratory and in the field, and the school equipment should make suitable provision for both. In schools having good laboratories for physics and chemistry it may be possible to utilize one or both of these rooms—though a separate room is much better—and some of the apparatus used in teaching physics and chemistry need not be duplicated, perhaps, for the soil work. In this laboratory there should be a supply of running water and gas for each student's desk. One compound microscope and analytical balance, or more, according to the size of the class, ought to be provided, besides the hand magnifiers for each student and scales of the Harvard trip or similar pattern. Apparatus for collecting samples of soils, an oven for drying these soils, tubes for making various determinations with regard to soil moisture, Bunsen burners, crucibles, stands, beakers, tubing, and soil thermometers should be included.

A SCHOOL MUSEUM.

For the study of plants and crops in division 2 of the suggested classification, the laboratory should contain an abundance of carefully selected and prepared specimens of farm crops, especially of those crops grown in that community, and of the weeds that are most common and troublesome. As far as possible these specimens should show the whole plant, roots and tops, with matured blossoms or seeds. Sheaves of the different cereals and grasses may be gathered by the pupils. These will not only serve as material for class study, but they will make very attractive and appropriate wall decorations for the agricultural classroom. A hill of potatoes with the tubers attached to the stems and showing the root system of the plant, all placed in a large glass vessel and immersed in some preservative solution like formalin, is an object of great interest and instructive value to students. The gathering and saving for observation and study of specimen plants of unusual merit and of those that are in any way abnormal is a practice which should be encouraged among students of agriculture and which will do much to develop keenness of observation and thoughtfulness.

Of course this laboratory should be well stocked with specimens of seeds of farm crops of all classes and varieties that are or might be grown in that district. The specimens should be carefully labeled. Convenient and practical appliances for seed testing are an important part of this outfit.

Samples of the various commercial fertilizers on the market should be kept with a statement of the chemical analysis of each. There should also be ample provision for growing crops both indoors and outside, in various kinds of soils and conditions of culture. I believe that every high school teaching agriculture should have a glass house properly heated, where plants may be grown and studied during that portion of the year when the climate will not permit the work to be carried on outside. Such a house, which is not necessarily very expensive, is really indispensable to thorough work in this division of an agricultural course. Where there is no glass house, considerable work in growing plants may often be done in the windows of the schoolroom.

THE EQUIPMENT FOR OUTDOOR WORK.

A very necessary part of the equipment of an agricultural school is land. How much is desirable for school work is another question. I think a serious mistake is frequently made by schools in attempting to handle so much land that this part of the work becomes a burden. I believe that small plats worked with care and accuracy are of much more educational value than larger areas where part of the work is done by some one not connected with the school. So far as I know the most satisfactory school work in this division of agricultural study that has been done is at the Ontario Agricultural College, Guelph, Canada, under the direction of Prof. Lavitz, where the plats are one square rod in área and the work is done mainly by the students.

Under division 3 of the outlined classification the work can be done in the main with the same equipment as that already discussed. In addition to this there should be a small spraying apparatus—the one-barrel size is effective and not costly—and arrangements for mixing the different spraying mixtures. Also material and equipment should be provided for pruning, budding, and grafting, and for potting, layering, and setting of smaller plants.

Every school should have grounds where as many kinds of fruits, large and small, as experience has shown can be safely grown in that section, can be raised. Every home ought to have a good garden. Few do have. This is an important field for the agricultural school to develop. Hotbeds and cold frames are not expensive or difficult to make or manage. They should have a place on every farm. Unlike some of the other work, their use comes while the schools are in session.

INSTRUCTION IN ANIMAL HUSBANDRY THROUGH POULTRY RAISING.

The equipment for work in animal husbandry will probably seem to many schools somewhat more difficult to provide. In the study of the larger domestic animals pictures, charts, models, and manikins can be used to excellent advantage. Farm animals can usually be borrowed from farmers near the school. But in addition to this there should be some personal handling and care in breeding and feeding. This can hardly be done unless the school owns the animals. I think that poultry is the most available and suitable of animals for this purpose and that its use possesses so many valuable features that poultry will probably soon become standard school equipment for instruction in animal studies.

These are sufficient reasons why the public schools should concern themselves with this branch of agriculture. Poultry is kept in practically every home in the country and smaller towns and in very many homes in large cities. Poultry keeping is growing in popularity everywhere. It appeals to young and old alike, to people of wealth as well as to those with little or no means. Its products are coming more and more into demand as a result of the greater attention paid by the public to the questions of pure food and the cost of living. Add to these circumstances the considerations that an equipment for handling and teaching poultry culture does not require a large investment of money and need not occupy much land; that it is not dependent upon climatic or seasonal conditions as are most other kinds of agricultural work; and that it may be made self-supporting or even a source of profit if properly managed. All these are further reasons why poultry deserves consideration as an educational asset.

Furthermore, the principles of animal breeding and of feeding apply equally to horses, cattle, sheep, swine, and to poultry, while the rapidity with which poultry multiplies and the shortness of time required for its development make it specially well suited for courses in animal studies. I would make one or more pens of well-bred chickens a part of the outfit of an agricultural school.

Every farm home should know how to handle and care for milk and its products. The school should be equipped with a milk tester, separator, and churn. If I were teaching in a high school I would try to rent or borrow one or more cows, care for them on or near the school grounds, and teach by actually *doing*. I know this entails any amount of work. I know it means a complete revolution in many respects of present customs and traditions of the public school, but these changes must come, and here and there have come, to meet the changed conditions.

The necessity for modern machinery and mechanical constructions on the farm to-day is so fully recognized, and the amount of money invested for these is so great that no argument should be needed to support a claim for including some provision for instruction in farm mechanics. Even a careful study of the catalogues of manufacturers of farm implements, to the end that the students may become acquainted with the appliances now used in working good farms would be time well spent. In many instances I am confident that manufacturers, or local agents, would gladly lend a school machinery for study, just as it is now lent to agricultural colleges. I would have some equipment for teaching farm drainage, sewer construction, ventilation of buildings, and farm sanitation. I would have models of farm buildings, fences, feeding racks, and things of that sort, together with equipment for giving instruction in cement construction. A few years ago one of the students at the University of Illinois was asked what he got out of his course in landscape architecture and replied, "I have learned not to hang the clothes line in the front door yard." This much, at least, the high school can teach. Pictures of attractive homes, schools, and other public buildings, with study and discussion of the features in their setting which add to or detract from their beauty, are easily obtained and may be made quite effective. An acquaintance with the trees, shrubs, vines, and other decorative plants that can be safely used for planting in the latitude of the school may be acquired from a few specimens on the school grounds and in the vicinity.

I have said nothing thus far about the library of works on agriculture and of reference books and publications that should always be a vital part of the school equipment and always in active use. Nor have I mentioned what I consider the most important and helpful part of the whole equipment—an interested, hearty, and enthusiastic support of and participation in all this agricultural work by the patrons of the school. The experience and judgment of these residents should be of the highest value in directing and giving weight to the instruction, and their participation in the work of the school should result in a welding of interests and sympathies between home and school which would be the richest and strongest asset in the whole equipment of the agricultural secondary school.

Is there a question, Who is to get this equipment for the schools? and how? I think that rests mainly with the man behind the desk.

DISCUSSION.

After Prof. Barto's paper on the subject "Proper equipment for teaching agriculture in secondary schools" had been presented, Prof. D. J. Crosby, of Washington, D. C., opened the discussion as follows:

PROF. CROSBY.—Fortunately I have not prepared a paper on this subject. If I had I should probably go over a good deal of the ground that Mr. Barto has covered in his very excellent discussion of the equipment for teaching agriculture. He has covered the ground excellently for the public high-school equipment, and has covered it in considerable detail.

I hope, however, that Prof. Barto will pardon me if I drop a word of warning here and there and make one or two suggestions from notes that I took while he was talking. One of the words of warning is with reference to the making and using of collections of farm crops, seeds, and other materials that are brought together by teachers of agriculture in the public high schools, without sufficient provision for taking care of them for future use. It is a very easy matter to get together a lot of hay and grain and seeds and soils and other things like that, but if you were to go into a room where these collections have been brought together, and see them jumbled together in an indiscriminate mass, as I have seen them a number of times, without anybody knowing where anything is, and without anybody being able to use what is there, you would be convinced with me, I believe, that it is better not to have quite so many collections and have them in better shape. So I think it is well to emphasize the importance of following such methods of mounting and labeling collections as Montgomery has worked out in Nebraska and others have worked out elsewhere, requiring the use of flasks, bottles, cans, lantern-slide mounts, Riker mounts, and various other devices for mounting and preserving seeds, grains, insects, and other specimens, so that they will not be destroyed and will always be convenient for use.

The use of land is a question, I think, that puzzles more teachers of agriculture than any other one problem confronting them, and I fully agree with Prof. Barto that there is danger of having too much land—entirely too much land. I recently saw some land put to pretty good use at one of the high schools in Los Angeles, Cal—the Gardena Agricultural High School. Los Angeles has seven or eight high schools, each one of which gives three or four courses and specializes in one of them. At the Gardena High School, for example, the pupil can get four years of Latin, three years of Spanish, three of German, three of French, and all the general scholastic courses, but the agricultural course is the one emphasized. The other high schools of Los Angeles are also teaching agriculture, but without putting the emphasis on the subject that the Gardena school does.

The Gardena Agricultural High School has a farm of 14 acres—a pretty large farm for a city high school. Two and one-half acres of this land is in trial gardens, used as their name indicates, to try out all sorts of semitropical and tropical vegetables and fruits, just far enough to bring them to maturity and see whether they will do well in that vicinity. To a certain extent it is an experiment station for this school and for this region. Many of the things they are growing there the boys have never seen before. It is an education for them. There is also a trial vineyard where they are trying out various grape vines, to ascertain which are the best in quality and which the most profitable. They also have a trial orchard for tree fruits, and plats of alfalfa.

I believe that all of the land used for school purposes should be put upon a trial basis, an educational basis. I do not believe, for example, that we want to have individual gardens merely for the sake of raising plants; we need to inject the experimental idea into it, or the contest idea, perhaps, to see which boy can raise the most and the best succession of garden vegetables for the table, running throughout the year. Put it on a contest basis, so that the boy who comes from working in the garden all his life will not feel that he is being forced out upon the land to do things that he knows perfectly well how to do, and without any reason being given for it. If he is engaged in some contest or some experimental work he will take a hoe and do all the weeding and thinning that is required, without any feeling of revolt or opposition, but if he is sent out in the garden merely to weed peas or onions or to thin beets he will find some fault.

One very necessary bit of farm equipment, it seems to me, is a small nursery of seedlings for educational work—for budding, for grafting, for transplanting, and work like that—and I think that the experimental work for the nursery ought to start right from the putting of the apple seeds, or whatever are raised, into the plats, and extend from that point on to the finished tree ready for transplanting, for grafting, or putting into the orchard.

In the animal-husbandry work of public high schools I believe we shall have to depend for the majority of our equipment upon the farms in the vicinity of the school, and make trips to them to study typical animals, typical herds, typical flocks, and up-to-date equipment. It is possible, as Prof. Barto has pointed out, to have some poultry, principally to carry on some experiments for children, and to explain and demonstrate the use of incubators, brooders, and all that, but we have not yet developed a resident corps of teachers who are at the school all the year around, and we shall have to look out for the time in summer when there is no school, and make some provision for taking care of our equipment during that time.

In connection with our animal-husbandry trips, I think we should not neglect to visit the butcher shop for the information that the butcher can give us concerning the different cuts of meat and their prices; nor should we omit the creamery, the dairy barn, and other like places. If any of you were present this morning in the association which was discussing farm management, you will recall that it is considered a very essential part of their work to get out and see what the successful farmer is actually doing.

Along with whatever other equipment we may have for our work in animal husbandry, we should not forget the score cards, the record forms, the calipers, and tapes for measuring cattle, and the other necessary things that go along with a complete outfit for the information and education of the boys.

I was glad that Prof. Barto mentioned the matter of farm mechanics and I would include in farm mechanics not only the study of farm machinery, but this thing that is variously called manual training, mechanic arts, etc., in most of the schools that are teaching agriculture. I think we are in urgent need of some good pioneer who will devise a workable system of farm mechanics for the carpenter shop and the forge shop in agricultural schools.

I have recently visited one teacher of manual training in a so-called agricultural school, and said, "What are you doing for the boys who are going back on the farm, those that are taking the agricultural course?" He said, "We have some work for them on power machinery, gasoline engines, etc.," and then added "I want to show you," and he took me to a show room where there was a case containing all the different kinds of joints that he could possibly devise. Pointing to the case, he said, "It took us six months to go over that series of exercises." He then pointed with pride to a collection of patterns representing the ordinary output of a foundry. I asked, "How many of your boys are going to have foundries on their farms?" His reply was, "Well, it is interesting for them to know how these things are done." We waste entirely too much time in our agricultural schools on things that simply "interest the boys."

Let us compare such work with the farm mechanics' work in the manual training department of the Gardena Agricultural High School. In the seventh and eighth grades their work does not differ very much from the ordinary training work in the village or city schools, but in the high school it is real farm mechanics; it is constructive work. The necessary shopwork consists largely in making models of fences, gates, barn frames, and other things that are used upon the farm, but they do as little of that work as possible. There is always plenty to do around the school that is of a practical and substantial character and along the lines of construction work. For example, they put up potting sheds at the greenhouse, and two lath houses to shade the citrus seedlings; they make concrete tile and put in their irrigating system; they put up fences, and in fact did anything and everything connected with the work on the farm. When I was there they were constructing a house for a gas plant connected with the school, and the school board that has charge of this school had made an appropriation for a barn to shelter their horses and store their forage. This barn is not to be put up by contract, but the board will furnish whatever carpenters are needed, two or three or four carpenters—one carpenter to each squad of four or five boys, so that these boys who are taking the agricultural courses will actually put up a farm barn under expert supervision. Now, we shall not be able to put up buildings all of the time in connection with public high schools, but I think we can give much more attention than we have been giving heretofore to making the manual training work the kind of work that will at least illustrate and demonstrate the principles that the boys will put into operation when they do go out upon the farm to engage in their life work. To such boys this kind of work is of greater practical value than foundry or machine shop work, and it is just as educational.

IV. THE SMITH'S AGRICULTURAL SCHOOL AND AGRICULTURAL EDUCATION IN MASSACHUSETTS.

By R. W. Stimson,

Agent for Agricultural Education, State Board of Education, Boston, Mass.

The Smith's Agricultural School, at Northampton, has 100 acres of land. In 1908–9 it was the only vocational agricultural school in the State; so that some of the boys who wanted secondary training in agriculture had to come from a distance and live away from home. Even now, we have the problem there of making practical the instruction of the boys who come from a distance and who have to be initiated into the mysteries of the school.

Among those mysteries is the problem—the insolvable problem, I fear—of trying to make an agricultural school show a profit. I do not know that I can better illustrate educational experience in this regard than by referring to the experience of Booker T. Washington, who says that a great industrial school, like Tuskegee, or any school that tries to be thoroughly practical, is always getting up to a level where it can show a profit, but never getting above it. The moment a boy can show a profit from his acquired skill, it is your duty to let him go. The mean is always somewhere down below the level of profit.

I am unaware of any institution which has been able to show a financial profit in connection with its total educational activity, and I have very little hope that such a profit will be shown very soon. If you do show a profit, you do it by an independent labor staff, as at the Smith's school. Here the independent labor staff carries out the processes taught by the school; and from time to time, when the instruction of the boys from a distance requires it, we put those boys into the places of the regular staff. They are given the real thing, but they are given it only from time to time. We do not depend upon them entirely for the work of the school.

Moreover, we insist that the students clear out in the summer time, that they go out on farms, that they go back to their own farms to work, or to other good farms where they shall be under absolutely economic conditions. In agriculture, just as in machine-shop work, you need to put the boy into the economic bath; you need to plunge him into it up to his eyes, and keep him there long enough for him to gain the benefit to be derived from actual economic experience. You need to put him in "all over," and the sooner you get him in "all over" the better. You need to see to it that during his schooling the boy shall be engaged in real farming long enough and earnestly enough to develop those real powers of discrimination which ought to be exercised in determining on graduation whether or not he should go out to be a farmer. If he can not get up at 4 o'clock in the morning on the farm that requires it; if he can not stand dairying; if he can not stand the kind of work required for success in the sort of farming he thought he would like to follow, then he ought not to be a farmer. He is starting out in the wrong direction, and the quicker he finds this out, the better it will be for him. The best thing you can do for him is to put him right up against the real thing, and then let him determine whether he has made the proper selection of a calling. In this way, if farming is not what he is fit for, he can change before it is too late. We try to put the boys up against the real thing at the school itself, so far as its equipment and work will permit.

Fortunately, most of our boys have lived near enough to enable them to live and work at home during the school year, and part of the others have been secured jobs on farms near by, with the privilege of attending the school. The work of the school has been organized and conducted primarily for the benefit of such boys. Of course, we used our common sense and did not duplicate equipment that was right at hand, for the Smith's Agricultural School is within about 6 miles by trolley of the State Agricultural College. The school had a herd of cows. I advised the trustees to sell that herd, and we sold it, because I did not want our instructors nor our boys to be thinking one single minute about school cows. I wanted them to think about cows, and their profitable management on going farms. Those boys who live at home and come to school in the morning and go back at night we have worked on their own cows.

We men had organized the Connecticut Valley Breeders' Association, and had determined at the outset that we would never have a discussion without a demonstration of the thing we were talking about. For example, we decided to discuss the choice of a male calf for the improvement of a dairy herd, and we decided to have bull calves for our demonstration that came from families whose producing qualities were well known—families whose records had been kept. It turned out that the only place we could hold a demonstration with such calves was at the Massachusetts Agricultural College. We went there and held our meeting. In the midst of a demonstration of a perfect Guernsey bull calf, whose dam and dam's sister were beside him, both high record cows, and whose sire was known to be from high-producing families, a young farmer said in an undertone: "He ought to be a good one; the State owns him, and the State feeds him." Everywhere there is a tendency to discount college-owned or school-owned live stock and operations. If excellent, most farmers are likely to feel that a "barrel of money" from some easy source has produced the result, that such a result is beyond the reach of the man who must depend upon his own farming for a living.

Our boys are given such benefits as are derivable in a practical school from judging and scoring State-owned live stock, but we take the boys to the State college for this part of their training. Our major effort is to deal with animals and operations which are parts of the equipment and work of actual going-farm enterprises. To this end we are going to have our boys build a model dairy barn and bring in for a test period one cow from each farm—the home farm of the boys. The dairy school for boys from a distance will then be run during three months of the winter. We are going to agree with the fathers of the boys as to a proper return for the use of the animals thus furnished for the three months' period. We will share with them the profits; or, for that matter, the bargain would be a good one if they were given all the profits. Under this plan every cow tested will be part and parcel of an economic farming proposition; she will represent some farmer's money and some farmer's judgment. If she is found to be returning a profit, well and good; if she is not returning a profit, the best possible service that can be rendered the owner is to let him know that she is a losing proposition.

Our boys put out 500 apple trees on a permanent, semipermanent, and filler plan this last spring; they dehorned, pruned, grafted, and sprayed old apple trees; they put out 3,000 forest trees of four different varieties; some of them have built poultry houses, and the others are working on their poultry houses now. They have fitted up a model horse stable. In short, in everything we do we try to create permanent improvements and to practice profitable methods. In all phases of our vocational education in Massachusetts, we are emphasizing the fundamental importance of "productive work."

Give a boy a stake to work for that will stimulate him to accomplish what you desire him to accomplish. Some of our boys need to be earning something. They need to be pulling their own weight in the family boat. Home farm work—not everything any year, but something every year, directed by the school—we believe to be the best means to this end. I do not myself have very much confidence in work on little school plats for boys over 14 years old. I do not believe we have a right to call a boy back from a home farm to work on a small school plat during the summer. If we have work at the school, let us have not a plat but an acre, and raise a crop worth marketing. Let us conduct our operations in such a way as to teach the boy the benefit of applying the best methods under extensive field conditions, by showing him a good profit produced by his faithful and carefully directed efforts.

I know there is a difference of opinion here. There are many things we can learn from demonstration plats; in their proper place they are essential, particularly with reference to methods or crops that are purely experimental and should be tried out first in a small way. But it seems to me that in this secondary school work we should direct our attention mainly, not to experimental work, but to demonstrating what have proved to be "dead sure things" somewhere under farming conditions like those in our vicinity.

The results of our observations have led us to put forward this method for the development of our agricultural school movement throughout the State. Wherever there is a community or a group of towns wanting our assistance in the building up and maintaining of such a school, we say: "We will advise you as to buildings, equipment, and land; and the State will pay half of the expense of maintaining the school if you keep it up and run it in accordance with methods which we can approve." We have adopted the plan of what we call "approval in advance." At the end of a given year we go over the plans and if we find any mistakes, we correct them before we make our arrangements for the next year. If we can "approve in advance" we will help to support the work.

But the thing we are pinning our faith to, gentlemen, is the man—the man out among the farmers and among the farmers' boys, in what we call vocational agricultural departments. We, working with the local authorities, pick a man, put him in a high school and require him to give all of his time to agriculture and nothing else. We surround him with an advisory committee of five of the best local farmers. We tell him to take a three months' vacation, not in the summer but in the winter—January, February, and March.

Why do we give him so much vacation? In some States you require him to devote 11 months of the year to the work. Well, we want a permanently progressive teaching staff in our State in charge of our agricultural work, and a man can not always be lifting himself by his own boot straps. If he has a liberal vacation at that time of the year, he can go to any one of the various agricultural colleges and take a special course at a time when the professors are at home. He can thus renew his energy and his knowledge. He can bring himself up to date. He can get freshened up and come back in the spring full of vigor, animation, and enthusiasm for the work of the ensuing year.

Another thing: We are now working for the 1912 crop in all our agricultural school work in the State of Massachusetts. Not general and deferred values, but values local, individual, and immediate are our aim. Now, we may talk peanuts in the South, or citrous fruits in California, or sugar beets in Michigan, or cotton in Mississippi, or sugar cane in Louisiana, or tobacco in Kentucky. It will all be interesting, very interesting; and somewhere along the line we ought to talk of these things because of their broadening influence. Such study gives dignity and horizon to the calling. But after all we must get right down to this boy's farm and that boy's farm, deal with conditions as each boy in the school knows them to exist on his own farm. If we dealt largely with school grains and school crops, if we dealt with silos and fertilizers, if we dealt with breeds and breeding or feeds and feeding, if we dealt with general principles only, we might almost as well be dealing with peanuts, and citrous fruit, tobacco, cotton, and sugar cane. We must get our general principles clearly into the minds of the boys. But we must show them, after they have mastered these general principles, that we can apply our teaching through our practical and progressive instructors to the particular conditions as they exist on the individual home farms of the boys themselves.

Two men got on my train the other day at Hornell, N. Y. They had rifles and they had ammunition. Their real sport would begin when they began to get their eyes on the birds. If you want a meal of game and do not get your eye on the bird, you go hungry. The bird we are getting our eye on is not birds in general, but the particular bird. After generalizing, finally, if we succeed in our work, we must get down to the particular bird, to John's farm, on which, in 1912, he wants to grow an acre of corn and get from that acre of corn his school clothes and as much more of profit as he can make that acre produce.

I must not talk very much longer. In closing, let me only add that there is one other great merit in this high-school agricultural department proposition, and that is its flexibility. If you can not do anything noteworthy at a given school, or if you get the wrong man, or if people lose courage, and you have to withdraw your effort in one locality, you have no buildings to rot down, you have no equipment to rust out. You can simply transfer your efforts and State aid somewhere else, still hoping to come back at a later day with a better man and woo your maiden once more.

V. THE UNPREPARED TEACHER OF AGRICULTURE IN HIGH SCHOOLS AND COLLEGES OF EDUCATION.

By A. V. Storm,

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This question is not one of my own choosing, but has been assigned me; nor would I have selected it had it been left to my choice. However, I am willing to discuss it because it leads to the consideration of questions that are pertinent at this time. At the outset I wish to say that I do not wish to be circumscribed too closely by the wording of the topic, limiting as it does the charge of unpreparedness to teachers of agriculture in secondary schools and colleges of education. While it is highly appropriate that we should give special attention to the proper preparation of those who are to teach agriculture in secondary schools and colleges of education, let us not lose sight of the great amount of unpreparedness on the part of many of their colaborers, especially in the colleges and universities, nor of the other fact that the unprepared in agriculture are found in other educational positions than those of high schools and colleges of education.

There are perhaps two reasons why we see so clearly this unpreparedness in the teaching of agriculture in high schools and colleges of education, while we have so long been blind to a similar unpreparedness in the teaching of other college subjects. The first is the newness of agriculture as a subject in the public school curriculum; being new and hence more or less of an interloper among the already numerous full-grown and respectable members of the educational social circle, it is scrutinized with the greatest circumspection to be quite sure that it is entitled to recognition; and, as in many of our social groups of to-day, the one seeking admission must show far better credentials to get in than many of those already in must show in order to stay there. However, this is not a misfortune, for the more carefully the friends of agricultural education guard its fitness for entrance into the curriculum, the more signal will be its achievements and the more helpful its career.

The second reason why we challenge the unpreparedness of these teachers of agriculture and raise no voice against that of certain other teachers is because of a difference in the standards of preparedness. There are university and college professors holding positions of influence who, from their moral and personal habits, are unfit to stand before young men and women. I know of no greater unfitness than this. I do not know what your position may be; but as for me, no man can possibly know enough about the subject matter to compensate for his lack of moral worth if he is to stand before my boy or girl. Other men and women there are who are so weak in the pedagogy of their work that they remain in faculties decade after decade to the contempt and loss of students until the scythe of Father Time or the purse of Father Carnegie relieves the situation. Other men and women there are whose personality makes it impossible for them to succeed, and yet, like those just mentioned, they are saddled upon suffering students and then tied in the saddle, there to remain until the pale horse and his rider shall spirit them away. Why are these persons chosen to teach and retained so long in their positions? Because they know the subject matter to be taught. And from what point of view? From that of the teacher? No; from that of the student, which is a vastly different thing. The greatest incubus upon college teaching of to-day is selecting for teaching positions and retaining therein those who have only a student's knowledge of subject matter, and who are without the other essential qualifications of a successful teacher. Why is this so? Three significant reasons appear: First, lack on the part of those who select faculties of a proper appreciation of the value of other qualifications in a teacher. Second, because it is so easy to apply the student's scholarship standard. Third, because of inadequate facilities for preparing and testing out those who are to teach. Further attention will be given to these topics a little later.

A STANDARD OF VALUES FOR THE AGRICULTURAL TEACHER.

As I understand the purport of this topic, the criticism is directed against teachers of agriculture in high schools and colleges of education not because of their moral unpreparedness, their professional unpreparedness, nor their natural unpreparedness; but for their lack of the knowledge of the subject matter to be taught. That we may have a sound basis for discussion, let us establish some standards. What are the fundamental characteristics that should mark every teacher? First, moral character; second, fitness to teach; third, general education; fourth, special education; fifth, professional education; sixth, practice.

Moral character and aptness to teach we will not discuss, realizing that they are equally essential to the rural teacher, the high-school teacher, and the college professor, whether his work be in Greek, medicine, animal husbandry, or pedagogy.

In addition to these two, what shall be the standard preparation of our teachers of agriculture? It should contain the same elements whether he is to teach agriculture in a country school, a high school, a normal school, or a college, and would only differ in the proportionate amount of each and the special adaptation to the particular kind of school.

That we may have a type and still be specific, let us consider the proper preparation of one who is to teach agriculture in a high school, representing as it does the most urgent demand now being made upon institutions that are preparing agricultural teachers.

Besides (1) moral fitness and (2) natural fitness we have (3) general education. A very valuable and almost indispensable element in general education is that which is entirely separated from schooling; i. e., the education that comes from environment. For one who is to teach agriculture successfully in a community where general farming is practiced, not to have spent a goodly portion of his youth upon the farm is a handicap that it is well-nigh impossible to overcome. To this experience should be added a thorough training in the common branches. Not such, however, as he is now receiving; the common branches need a general purification and redirection that shall better adapt them to the needs of the elementary pupil. They need certain algebraic processes applied to them—subtraction, addition, and substitution, of which the most difficult to apply is subtraction. After this elementary education in which the arithmetic, reading, language, spelling, geography, etc., are better adapted to the past experience and future need of the child, he should receive a strong high-school course of four years with the work distributed about as follows: Mathematics, two and one-half years; English, three years; history and civics, two years; science, three and one-half years; foreign language, two years; electives, three years.

Though we may differ somewhat in the distribution of this high-school work, we shall probably agree very well up to this point; but now the question arises whether the pupil shall take his advanced work in a normal school or in an agricultural college. The organization of educational plants varies so much in different States that it is difficult to make an arbitrary decision that will seem to all persons to be just; but after much investigation and consideration, I am confident that the consensus on the part of those best prepared to judge is that it is the purpose of the normal school to prepare teachers for the elementary schools and that teachers for schools above those of elementary grade should be prepared in colleges and universities. Applying this to our situation, we must conclude:

First, that normal schools should give to all teachers some preparation in nature study and elementary agriculture.

Second, that agricultural colleges should prepare teachers of agriculture for all institutions above the elementary schools, including the normal school itself.

What preparation shall our prospective high-school agricultural teacher have in the college of agriculture?

His preparation should be in four different lines: First, general; second, technical; third, professional; fourth, practice.

His general preparation will be of two kinds. The first includes such subjects as English, public speaking, economics, commonly thought of as cultural subjects (though that nomenclature has about lost its significance), and the so-called practical subjects of mathematics and the sciences which constitute the foundation for his special work in agriculture. I wish to emphasize the need of efficient preparation in English, public speaking, and economics as a most practical preparation for the extension work which every high-school teacher of agriculture should do among his constituents.

The courses in science should be strong enough to constitute a good foundation for the student's special agricultural preparation and should be sufficient to enable him to conduct the work in any of the high-school sciences, such as botany, chemistry, zoology, physiography, and physics. The value of having the teacher of agriculture in charge of the science work in a high school is twofold; it enables many schools to have agriculture well taught, which otherwise could not do so, and at the same time the high-school sciences under these circumstances will be better taught than they are at present. It is far better to have the high-school sciences taught by the agriculture teacher than to have the plan more common at present of having agriculture taught by the science teacher.

The technical preparation of this high-school agriculture teacher should include the fundamental courses in all of the departments of the agricultural college or division. His specialty should be agriculture; not some one phase of agriculture. Any emphasis he places on one subject more than upon another should be guided by these principles: First, the greatest need of his constituents; second, the adaptability to school-teaching conditions; third, fundamental and underlying character of the subject matter.

Perhaps I may again say with safety, that so far, we may not expect serious disagreement; but now we come to a point where we may find some radical differences of opinion. If we are to judge by a practice still quite common, there are those who believe that teachers are born, and hence, need no making; who, while they believe in all other kinds of culture, do not believe in teaching culture; who think that a knowledge of the underlying principles and the best prevailing practices in any department of human activity is necessary to mark success in that activity except in the intricate, profound, and vital processes of teaching. But the most thoughtful do not take this view. They believe that one who is to teach should prepare himself for that important duty by adding, to his knowledge of the subject matter to be taught, a knowledge of the mind to be taught, and of the principles and processes to be used in teaching. Of what shall this preparation consist?

The professional preparation of a teacher of agriculture in a high school, or other institution above the elementary school, should be approximately as follows:

Psychology, with a special reference to adolescence, five or six hours;

History of education, including especially the history of secondary and industrial education, four hours;

Principles of education, five or six hours;

Principles of general method and the method of the recitation, two hours;

Special methods of high-school subjects, especially methods applied to the sciences and the industrial subjects, two hours;

School management, especially as applied to high schools and colleges, two hours.

In addition to the professional preparation just outlined, there should be the equivalent of from two to four hours' practice work in the teaching of agriculture and general science subjects. This work should preferably be given during the senior year. Lesson plans, criticisms, and similar details of practice teaching should accompany this work. One prepared in this manner is ready to teach agriculture in any grade of school or college, unless it be in some of the more technical advanced courses in the agricultural colleges, for which he would need additional work in that particular subject.

Having established in some measure a set of standards, let us next ask how nearly we are approaching these standards at present. It is well known to all present that a very small percentage of those teaching agriculture have had any even approximately adequate preparation for that work. The demand has come upon us too suddenly for us to have a sufficient supply of properly prepared teachers. Our own institution at Ames can not supply one-tenth of the demand, and other institutions are probably equally embarrassed.

This, then, is the situation: We have definite standards and no men who have attained to them. We also have a large and insistent demand for teachers, and must furnish somebody. What shall we do? Shall we use all our efforts to prevent the teaching of agriculture in schools until we can prepare the teachers? No, for three reasons:

One, we shall never have teachers, except for this demand; two, more good will come from having it taught fairly well than not at all; three, we can't stop it if we try.

So we must take the other alternative, which is:

First, set all the machinery promptly into motion for the thorough preparation of teachers; second, do everything possible to improve the teachers already teaching; third, furnish the schools with the best teachers we can in the meanwhile.

Let us treat these in reverse order: Whom shall we recommend now? I believe, of those available, we should select our candidates in the following order:

First, those with natural ability, farm experience, and agricultural preparation, even though they have no professional preparation or teaching experience.

Second, those with natural ability, agricultural preparation, professional preparation, and teaching experience.

Third, those with natural ability, farm experience, good science preparation, and teaching experience.

Fourth, those with natural ability, farm experience, good science preparation, and no teaching experience.

What can we do to improve those already teaching? A few will discontinue teaching to prepare themselves fully. The summer school, the teachers' normal institute or association, and the correspondence course must do the rest. While the summer school has appeared not to increase very rapidly in the recent past, yet I believe it is destined to do a great work in the preparation of teachers for work in agriculture, especially for those who have the other essential qualifications, including preparation in college science. As for this last class, summer schools of sufficient length and offering work of a college grade will enable them to prepare to teach agriculture successfully in a high school.

The teachers' institute can furnish a point of view, some enthusiasm, some information, methods of work and devices, but can not give that thorough knowledge necessary to the proper teaching of agriculture above the elementary school. The correspondence course is more far-reaching as to numbers. It will be of inestimable value to elementary teachers, especially those of the rural schools, and of great value also to present science teachers who are trying to teach without special agricultural preparation, yet it is only a temporary expedient so far as the preparation of any but elementary teachers is concerned.

What shall we do for the thorough preparation of our teacher of the future? Where shall he get his agriculture? Where his professional preparation? Where his practice? Again, different conditions in different States may make different plans seem most advisable. The need is to organize the work that the student in his four years' college course may combine three into possibly four things, already enumerated—general education, agriculture, professional work in psychology and education, and, if possible, practice teaching.

Where shall these be given? Universities having a college or department of education, a college of agriculture, and a secondary school of practice may easily meet these demands by a reciprocal relation among these departments. Colleges or universities having departments of education but no agriculture can meet the need by establishing departments of agriculture, though to have these efficient would require a greater outlay than most colleges of this class would care to make. Colleges of agriculture unassociated with a college or department of education can solve the problem by creating a department of education, as many of them are now doing. In case a Commonwealth has its normal school and university separate from its agricultural college, it will be much wiser to create a department of education in the agricultural college than a department of agriculture in the normal school or college of education, if for no other reason than the great difference in the cost of establishing and maintaining the duplicate agricultural plant.

If departments of education are established in colleges or divisions of agriculture, what shall be the character of the work offered therein, and what the preparation of the instructional force? In my own opinion the principles, processes, and facts of agriculture should be taught in the regular agricultural college classes. The department of education should have all of the work relating to the profession of teaching, including the organization of these principles, processes, and facts of agriculture into working systems suitable for use in the schoolroom, and should also have charge of the practice work of students. If this is true, it determines very largely the qualifications of the instructional force in the department of education in such a college.

The instructor must be educated to and experienced in the science and art of teaching. If, in addition to this, he could have equally good preparation in the science and art of agriculture, the preparation would be ideal. But as such men are not now available, the only rational thing for the present is to confine the agriculturist to his agricultural last and the educationist to his educational one. As to the normal school, it is vital that the agricultural work therein be taught by a man strongly and thoroughly prepared in agriculture. With the amount of emphasis placed upon methods in all the other work, the normal-school students need most the virile presentation of agriculture from the practical and scientific points of view. This is to be obtained only by a thorough course in an agricultural college.

It is even a more serious, because a more far-reaching, misfortune to have agriculture taught in a normal school by a nonagriculturally trained teacher than it is to have the same subject so taught in a high school.

I have in no measure given these topics complete treatment. I have endeavored simply to analyze the situation and bring the salient points into clear relief without elaborating upon them either in the form of discussion or argument, thus making it possible to spend more time in discussing such phases as appeal most to those present. I trust the statements in this paper are sufficiently pertinent and positive to make discussion possible.

VI. WHAT IS BEING DONE TO PREPARE TEACHERS OF SECONDARY AGRICULTURE.

By A. C. Monahan,

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At present the United States contains more than one hundred special agricultural schools of secondary grade. These schools are located in 17 different States, which support them in whole or in part. In 1910, agriculture was taught as a separate subject in more or less complete courses to more than 37,000 pupils in 1,800 public and 140 private high schools. The figures are taken from the reports submitted by these schools to the Bureau of Education. The number of schools giving instruction in agriculture indicates in some measure the demand for instructors qualified to teach this subject. In larger measure the figures indicate the *need* for such teachers.

It is true that much of the instruction given in these schools is very elementary and is of informational rather than of vocational character. It is true also that in the majority of them the courses are very brief. Better courses of a more practical nature, extending over a greater length of time, and covering the subject in a more thorough manner, would be given if competent instructors with the proper training could be found. Fully as many high schools are now giving four-year courses as are special agricultural schools, and the courses given by them are as vocational in their character as the courses given by the majority of the special schools. In California, for instance, 12 high schools have agricultural departments in charge of special agricultural teachers. All these schools are supplied with land for instructional purposes, varying from 3 to 27 acres in extent; all have available laboratories, and several have greenhouses. Michigan has 11 high schools with four-year courses in agriculture, each taught by a graduate of the Michigan Agricultural College. Massachusetts, New York, Iowa, Ohio, Minnesota, Tennessee, and Vermont each have several such schools. One or more may be found in almost every State in the Union.

Of the special agricultural schools and the 2,000 public and private high schools teaching agriculture, only a very few besides the institutions giving four-year courses in this subject have instructors with a college or normal school training in scientific agriculture, while a large percentage of the active teachers with this training have had no training in psychology or pedagogy. Probably no one factor has had greater influence in retarding the introduction of substantial courses in agriculture in all those high schools whose pupils are drawn in large numbers from farming districts than the shortage of properly qualified teachers. The demand for such teachers is indicated by the numerous inquiries received by the Bureau of Education for information concerning where men may be found qualified to teach agriculture in elementary and secondary schools. In a recent letter to the bureau President B. I. Wheeler, of the University of California, writes: "The demand for male teachers in the elementary schools of California is unprecedented. There has come at one and the same time a general desire for well-equipped teachers of science and the additional demand for men particularly equipped in agriculture." President J. A. Widtsoe, of the Agricultural College of Utah, says: "Up to the present a large majority of the graduates of this institution have gone out as teachers of agriculture, home economics, mechanic arts, and related subjects." President J. H. Worst, of North Dakota College of Agriculture, writes: "The demand for these teachers is far and away beyond our ability to supply. This, for the reason that the high schools generally of Minnesota and many in North Dakota are incorporating fairly strong courses in agriculture in the high schools."

It will be several years before the supply of men available as instructors in agriculture will be sufficient to meet the demand. Although the salaries paid are from 50 to 100 per cent higher than are those for instructors in other subjects in secondary schools, the State colleges of agriculture are finding difficulty in persuading men to qualify specially for teaching, because even these salaries are not equal to those paid the graduates of these institutions in the agricultural industries.

It is important, however, that properly trained men be obtained. Agriculture as a high-school science has not yet been developed into good pedagogical form and until it is so developed a higher grade, better trained teacher is needed for the agricultural subjects than for any other subject in the high-school curriculum.

WHAT THE TEACHER OF AGRICULTURE SHOULD KNOW.

Men for this work need a liberal education in the general culture subjects, together with special training: First, in the physical and natural sciences, particularly in their relations to the science and art of agriculture; second, in technical and practical agriculture and farm practice; third, in rural sociology and agricultural economics; fourth, in general psychology and pedagogy; fifth, in special agricultural pedagogy, including the history of agricultural and industrial education, the place and purpose of agriculture in the high school, the function of the agricultural high school, special methods of teaching agriculture, and other similar aspects of agricultural teachings. The opportunity for such preparation is offered by several of the State colleges of agriculture.

In each State and in Hawaii and Porto Rico there is one college of agriculture and mechanic arts, established under the provisions of the act of Congress of July 2, 1862. The law is commonly known as the land-grant act, because by it there was granted to each State public land equal to 30,000 acres for each Senator and Representative in Congress. The moneys derived from the sale of this land have formed perpetual endowment funds, the income being used for the support of the institutions. Further aid was provided the land-grant colleges by the acts of Congress of August 30, 1890, and March 4, 1907; so that now each State receives from the Federal Government, excluding the income resulting from the act of 1862, an annual appropriation of $50,000 in addition to the money paid for agricultural experiment stations. In 17 Southern States separate institutions for negroes have been established, and the Federal appropriation is divided between the colleges for white students and those institutions.

While the agricultural work of the land-grant colleges until 1907 was along technical lines almost exclusively, many of their graduates have become special teachers of agriculture in secondary schools, with no other training than their technical agricultural courses and the other subjects in their general college course. More recently has come the demand for men trained specially for teaching, and it was largely in response to this demand that in the act passed in 1907 for the benefit of the State colleges of agriculture and mechanic arts Congress included the proviso that part of the money "may be used for the special preparation of instructors of the elements of agriculture." This measure is known as the Nelson amendment, as it is contained in an amendment to the appropriation bill for the Department of Agriculture. Under its provisions each State is now receiving for the benefit of its college of agriculture and mechanic arts the sum of $25,000, all or part of which may be used for the special preparation of teachers of the elements of agriculture. This $25,000 is included in the $50,000 mentioned above. It is held by the Bureau of Education, in whose hands the administration of the Federal funds for these institutions is placed, that this language authorizes the expenditure of these funds for providing special courses in agricultural pedagogy, but not in general pedagogy.

As a result of the measure, 36 of the 50 agricultural colleges, not including the separate institutions for the colored race, at present offer some opportunities to their students to fit themselves as special teachers of agriculture for secondary school work. Twelve institutions offer only certain courses in general education elective to students in agriculture, 14 offer courses in general education and special courses in agricultural education, 1 offers courses in agricultural education only, 7 that have departments of education allow students in these departments to elect courses in agriculture, 9 offer prescribed four-year courses for teachers, and 3 offer special one-year courses to persons preparing to teach agriculture who have already had the equivalent of the general college education. Several others will accept properly qualified persons as special students. So far the colleges have failed to attract many persons to these courses in special preparation for teaching. According to the reports required by Federal law to be made annually by the presidents of the land-grant colleges to the Bureau of Education, in the year ended June 30, 1911, 140 students were enrolled in four-year courses in preparation for teaching agriculture, 7 in two-year courses, and 116 in one-year courses.

SOME TYPICAL TEACHERS' TRAINING COURSES IN AGRICULTURE.

A description of the special features of the pedagogical training for teachers of agriculture in all of the land-grant colleges can not be given here. However, enough are included to illustrate the character of the courses offered. The institutions selected are from widely distributed parts of the country and include examples of several different methods of arrangement of this special work. The courses and arrangement of the work in the other institutions are similar to ones described here. A statement prepared by the writer, regarding the work of each land-grant college in the preparation of teachers, is given in the chapter on agricultural education in the Report of the Commissioner of Education for 1911.

The University of California recommends for the State teachers' certificates as special teachers of agriculture only students who have completed in their college course 12 semester hours of work in education and at least 27 hours in agriculture and agricultural education. The term semester hour is used here and in following statements to mean one hour per week for one semester or half year; a four semester-hour course therefore is the equivalent of four recitations a week for a semester. Seven distinct courses in agricultural education are offered, only two of which are arranged especially for students preparing for high-school work. "Agriculture in secondary schools" is a two-hour course which treats of the aims, organization, and methods of agriculture as a high-school subject; "The practice of teaching agriculture" is a graduate course which includes lectures, readings, and conferences, together with school observation and practice of teaching. A course in the history of agriculture and two courses in farm management, including some work in rural economy, are given in the agricultural college. These are recommended especially for students preparing for teaching. The 12 hours in education include the history of education, the principles of secondary education, either educational methods or school management, and the practice of teaching. The last is a graduate course taken in connection with the course in the practice of teaching agriculture.

The University of Illinois, while allowing agricultural students to elect courses in the department of education, offers also a four-year prescribed course for prospective teachers of agriculture. This course includes 6 hours of agriculture, 31 hours of allied sciences, 17 hours of general cultural subjects, 6 hours in agricultural education, and 8 hours in general education. The work is divided as follows, the figures indicating the number of hours devoted to the subject:

Agronomy	21	Thremmatology	2½	English	4
Animal husbandry	16½	Botany	6	Rhetoric	9
Dairy husbandry	8	Chemistry	15	Economics	2
Horticulture	15½	Entomology	2½	Education	8
Secondary school agriculture	6	Zoology	5	Library science	2

The course in secondary school agriculture consists of a study of the features of agricultural science best adapted to high-school conditions; the best order and methods for their presentation; the process of suiting the course and instruction to the special interests and needs of each school community; and the planning and execution of laboratory and field work. The courses in education include "the principles of education" and "the principles of secondary education." The essential difference between this course and that offered by the University of California is in the amount of technical agriculture required, the Illinois institution requiring 61 hours of work against 25 in California. Illinois gives 6 hours of work in secondary school agriculture, and California 2 hours, while in general education Illinois gives only 8 and California 12. It should be noted, however, that part of the required work for the teachers' certificate at the University of California is graduate work, while the courses listed above given at the University of Illinois are all undergraduate.

The University of Maine also offers a four-year prescribed course which includes 50 semester hours of agriculture, 11 hours of education, and 89 hours of English, mathematics, sciences, and free electives. The course in education includes 6 hours in the history of education, 5 in the foundations of education, and 2 in child study. The work in agriculture, which is all in the last three years of the course, includes agronomy, animal industry, horticulture, forestry, farm management, veterinary science, agricultural chemistry, and bacteriology. The amount of technical agriculture coincides more nearly with that given by the University of Illinois, but at the University of Maine no courses are given to bridge the gap between these courses and the professional courses in education, as is done at the University of Illinois and at the University of California. In other words, the student who has completed the course at the Maine institution must work out his own agricultural pedagogy and methods of teaching.

A better plan is followed by the Massachusetts Agricultural College, in which a department of agricultural education was organized by direction of the State legislature in 1907, just before the passage of the Nelson amendment by Congress. The department has but one sort of students to deal with, namely, those preparing to become special teachers of agriculture. Therefore it can devote its entire energy to the special needs of these men. Six courses are given by the department, all open as junior and senior electives: General psychology, three semester hours; history and philosophy of vocational education, three hours; general methods of teaching and special methods in agriculture, two hours; teachers' agriculture, three hours; seminar in education, four hours. The teachers' agriculture consists of a selection and review of such parts of the technical courses in agriculture, horticulture, and the biological and physical sciences as are adapted to the work of the public schools; the seminar in education is arranged for the special study of such topics as legislation and agricultural education, and the place and value of agricultural science in school courses. A department of rural social science gives 22 semester hours of elective work of special value to men preparing to teach in rural communities: Agricultural industries and resources, historical and comparative agriculture, cooperation in agriculture, agricultural economics, and rural sociology. The prospective teacher entering this college takes the prescribed course for the first two years in common with all other students. This includes 10 hours in elementary agriculture and horticulture, 20 hours in physical and natural sciences, 12 hours in English, 10 hours in mathematics, and 14 hours in French or German. In the last two years three hours are required in English and in political science. The student preparing to teach must take all courses in education, together with electives enough to make at least 17 hours of work each semester. The electives must be taken largely from courses in agriculture, horticulture, forestry, and the closely allied sciences, and from the courses in rural social science.

In his four-year course the graduate of this department has therefore had 42 hours in general cultural subjects, 20 hours in physical and natural sciences, 15 hours in agricultural education, and 67 hours of electives chosen from courses in technical agriculture, horticulture and forestry, the physical and natural sciences, and the rural social sciences. As the institution is an agricultural college with no mechanic arts college or liberal arts college included, all courses offered are taught from the agricultural viewpoint and are closely correlated with the technical work in agriculture.

A prescribed four-year course is offered in the school of education of the University of Tennessee. The course includes even less agriculture than the University of California, only 18 hours of work being prescribed. This includes courses in agronomy, horticulture, animal husbandry, and dairying. Fifteen hours work are required in education, the courses including psychology and philosophy, the history of education, and the science and art of teaching. In addition to this arrangement students in the regular agricultural course may elect a few courses in education in their junior and senior years.

The University of Missouri was one of the first of the land-grant colleges to make special provisions for men desiring to fit themselves for teaching agriculture. Now provision is made for those intending to become general science teachers with a small amount of training in agriculture, and for those intending to prepare as special teachers of agriculture. The students in the first of these classes take all their professional work, including agriculture, in the school of education; those in the second class take their technical courses in agriculture in the agricultural college and their professional work in education in the school of education. The school of education offers three agricultural courses elective to all students preparing to teach. The "Administration of agricultural education" is a course dealing largely with the modern movements and methods in agricultural education from the standpoint of the superintendent of schools. No work in agriculture is a prerequisite. "Soils and plant culture" and "Animal husbandry" are two courses covering the fundamental principles of these subjects, arranged for prospective teachers who have had no other courses in agriculture. To secure a life certificate as a special teacher of agriculture candidates must include in their four years' work, in addition to the required subjects in the school of education, a minimum requirement of 15 hours in agronomy, animal husbandry, and horticulture from courses offered in the agricultural college for the bachelor's degree.

Mississippi Agricultural and Mechanical College has organized a "School of Industrial Education" which offers a special four-year course, leading to the bachelor's degree, in preparation for teaching agriculture or the mechanic arts. Students receive instruction in the languages, mathematics, history and civics, chemistry, physics, biology, geology, psychology, history of education, logic, ethics, sociology, besides technical courses in agriculture given in the department of agriculture. A course called "A study of the agricultural high school" is offered for advanced seniors and graduate students. This course aims to give the student a true conception of the kind of education the agricultural high school is intended to provide, and a full understanding of the service it is to render the community at large. It aims also to give the student a practical knowledge of the most approved methods of scientific agriculture. A model farm connected with the school of industrial education is conducted to illustrate the proper function of the agricultural high-school farm. The institution is developing a one-year postgraduate course which will include work in general and agricultural education designed to fit its students for filling positions as principals of agricultural high schools. The study of the agricultural high school will be continued, and the men will be given practical work on the "model agricultural high-school farm" and practical teaching in the working boys' courses offered by the college. This additional year's work is very desirable for men intending to teach, because the college is obliged to accept in its undergraduate courses a large number of men who have not had the advantage of a complete high-school course.

Several of the land-grant colleges have made provisions for prospective teachers of agriculture, properly qualified in other respects, to become special students in agriculture or agricultural education. The Michigan Agricultural College allows graduates of other recognized colleges and of State normal schools who have had at least two years' experience in teaching to select technical courses in agriculture, entering with regular classes and taking the subjects in the same manner and at the same time as the regular students. The courses selected may be from those given in any year of the college course but must be approved by the classifying officer. A similar opportunity is offered by the Kansas Agricultural College. The University of Maine offers a prescribed one-year course open to college graduates, high-school teachers with at least two years' experience, and normal school graduates who have taught at least three years. The course includes agricultural botany, 2 hours; agricultural chemistry, 4 hours; agricultural economics, 2 hours; elementary veterinary, 5 hours; economic entomology, 2 hours; bacteriology, 1 hour; agriculture, 34 hours; horticulture, 15 hours; forestry, 2 hours; school gardening, 1 hour; and education, 2 hours.

AGRICULTURAL COURSES IN NORMAL SCHOOLS.

In all but a few cases the work in agriculture in the normal schools is intended as preparation for the required work in the elementary schools. Agriculture is a required subject in the common schools of 12 States and in the rural schools of 5 others, and is required for teachers' certificates in 14 States. This has forced it into the curriculum of the normal schools of the States where the subject is required and has aided in its inclusion in the curriculum of normal schools in other States. The past year agriculture as a separate subject, in more or less complete form, was taught in 104 of the 196 State normal schools, and in the 24 county training schools of Wisconsin. About one-fourth of the State normal schools have graduates of agricultural colleges for instructors in agriculture. A large number of them offer brief courses extending from 4 to 12 weeks. A smaller number offer a full year's course and a few a course of greater extent.

The State normal school at North Adams, Mass., offers a three-year course in agriculture, as well as shorter courses in school and home gardening, agriculture, horticulture, and nature study. During the past three years the work was arranged and conducted with the cooperation of the State Agricultural College, which added to the faculty of the normal school an instructor and supervisor, who gave a portion of his time to instruction at the normal school and to supervision at its three training schools, a second portion to the promotion of elementary agriculture and nature study in the schools of Berkshire County—in which the normal school is located—and the remainder to instruction at the college in agricultural education. The three-year agricultural course includes all of the work in English, psychology, and pedagogy included in the regular two-year normal course. A graduate of the regular normal course or a college graduate may take the agricultural work given in the three-year course in one year. The work is intended to prepare special teachers of agriculture for supervisory work or for teaching in secondary schools. It includes the following subjects:

I. *Agriculture:* Soils; plant life—structures, functions, and diseases; fertilizers, tillage, crops; hotbeds, cold frames, and greenhouses; farm live stock, poultry, bees; dairying.

Horticulture: Flower and shrub gardens; window gardens; propagation, pruning, and cultivation; orchards and small fruits; forestry.

Insects and birds: Economic importance; control of injurious insects.

Farm Buildings and Machinery.

Sanitary Science.

(Agricultural physics and chemistry as these subjects are involved in preceding topics.)

Rural Social Science.

II. *Nature Study:* Its content and relation to science, literature, and vocational work.

III. *Manual Training:* Carpentry, cabinet work, forge work, assembling farm machinery.

Drawing: Freehand and mechanical, structural and decorative design, use of color, farm, and building plans.

IV. *English*, etc.

V. *Pedagogy and Psychology.*

The Fourth District State Normal School at Springfield, Mo., offers two elementary courses and one advanced course. The elementary courses together extend through five terms five hours a week and include a study of plant life, soils and soil fertility, farm crops, grain judging, enemies and diseases of plants and their control, crop rotation, feeds and feeding, live stock, poultry, dairying, and general farm management. The advanced course is a two-year course, which includes one term's work in each of the following: Dairying, animal husbandry, orcharding, farm management, poultry raising, and gardening. The institution has established a two-year agricultural high school in which the students devote one-fourth of the time to agriculture or domestic science and one-eighth of the time to pedagogy as applied to rural school teaching. The course is intended to prepare young men and women for rural school work, and graduates will receive a State teachers' certificate to teach in rural schools. The institution owns a model farm and good equipment for agricultural instruction. The instructor in agriculture is a man trained especially for teaching that subject.

The State Teachers College of Colorado, at Greeley, maintains a department of agricultural education offering nine courses. The work is arranged especially for rural teachers, and a special diploma in elementary agriculture is given to students completing the course. The institution is equipped with a farm, nursery, gardens, greenhouse, and stables. The instructor is a graduate of an agricultural college. The courses given by the department are as follows, each being a 60-hour course: Nature study; elementary agriculture; school gardening; soils and crops of the farm; animals of the farm; dairy industry and poultry husbandry; horticulture on the farm; the farm home; and rural sociology; and the rural school.

NORMAL TRAINING FOR NEGROES.

Among separate institutions for the colored race two are offering excellent opportunities to prepare for teaching agriculture in secondary schools, namely, Hampton Normal and Agricultural Institute, at Hampton, Va., and Tuskegee Normal and Industrial Institute, at Tuskegee, Ala. The Hampton Institute offers a three years' vocational course in agriculture and a special one-year course to students who have completed the vocational course and are preparing to teach agriculture. The one-year course includes the chemistry of soils, manures, and fertilizers; chemistry of dairy products; fermentation; milk testing; geology in its relation to soil formation; biology in its relation to plant and animal life; farm engineering, including a study of farm machinery and structures, and farm physics, including soil physics, the relation of the atmosphere to agriculture, climatology, and the organic life in the soil and air. Students taking this course are required to take also the teaching course in the training school, where they are required to teach classes in agriculture under a critic teacher. Upon the completion of both courses they receive a special diploma.

At Tuskegee students in the agricultural department preparing to teach may elect a junior-year course in elementary psychology in its relation to teaching and a senior course in the history of education and methods of teaching. These courses in education may be taken as postgraduate work by students who have completed the undergraduate work at Tuskegee or its equivalent elsewhere.

RECENT PUBLICATIONS OF THE BUREAU OF EDUCATION ON AGRICULTURAL EDUCATION.

Agricultural and mechanical colleges. Washington, Government Printing Office, 1908–1911. 869–924 p. 737–769 p. 993–1027 p. 979–1015 p. 8°.

Reprints of reports of the Commissioner of Education for the years 1907–1910. Chapters 23, 15, 19, 22. Items of interest relative to the agricultural and mechanical colleges; State legislation including appropriation bills affecting these institutions; statistics relative to the number of instructors, students, property, income, and the disbursement of the funds received from the Federal Government under acts of Congress of August 30, 1890, and March 4, 1907.

Agricultural education. Washington, Government Printing Office, 1910. 255–278 p. 8°.

Reprint of report of the Commissioner of Education for the year 1910. Chapter 4.
Current topics on the progress of agricultural education; provisions for training teachers of agriculture for the public schools; movement for securing Federal aid for secondary schools of agriculture and the trades; instruction in agriculture in colleges and universities not included among the land-grant institutions; auxiliary agents for the advancement of agricultural teaching.

Bailey, Liberty Hyde. On the training of persons to teach agriculture in the public schools. Washington, Government Printing Office, 1908. 53 p. 8°. (U. S. Bureau of Education. Bulletin, 1908, no. 1.)

List of references: p. 49–50.
Discussions of the nature of the problem, the means of training teachers, the general outlook, the significance of normal work in the colleges of agriculture. Prepared in connection with the staff of the United States Bureau of Education.

Bibliography of education in agriculture and home economics. Prepared by the library division of the Bureau of Education. Washington, Government Printing Office, 1912. 8°. (U. S. Bureau of Education. Bulletin, 1912, no. —. *In preparation.*)

Includes the most important recent publications on all phases of school and college work in agriculture and home economics; also a selection of the earlier literature on these subjects of current interests.

Federal laws, regulations, and rulings affecting the land-grant colleges of agriculture and mechanic arts. Washington, Government Printing Office, 1911. 13 p. 8°. (U. S. Bureau of Education. Miscellaneous publications.)

An administrative circular containing the text of the Morrill land-grant act of 1862, the amendment of 1883, the Morrill Act of August 30, 1890, and the Nelson amendment of March 4, 1907; also the rulings and instructions of the Department of the Interior relative to these acts and to the expenditure of the funds provided by them in aid of colleges of agriculture and mechanic arts.

Jewell, James Ralph. Agricultural education, including nature study and school gardens. 2d ed. rev. Washington, Government Printing Office, 1908. 148 p. 8°. (U. S. Bureau of Education. Bulletin, 1907, no. 2.)

A comprehensive survey of the status of nature study, school gardening, and elementary agriculture in the public schools in various parts of the world. Prepared in connection with the staff of the United States Bureau of Education.

Monahan, A. C. Agricultural education. Washington, Government Printing Office, 1912. 331–370 p. 8°.

Reprint of report of the Commissioner of Education for the year 1911. Chapter 9.
Digest of the reports of various State commissions on agricultural and industrial education; important legislation in several States in the 1911 session of the State legislatures; status of instruction in secondary

and elementary agriculture in each State; some types of secondary agricultural schools; a statement concerning what each State agricultural college is doing to prepare special teachers of agriculture for secondary schools; preparation of teachers in elementary agriculture in normal schools.

Monahan, A. C. Opportunities for graduate study in agriculture in the United States. Washington, Government Printing Office, 1911. 16 p. 8°. (U. S. Bureau of Education. Bulletin, 1911, no. 2.)

Data as to the courses available for graduate instruction in agriculture and the related sciences gathered in a systematic way from the State colleges of agriculture and mechanic arts, the State universities and the institutions represented in the association of American universities; classified by subjects and institutions. Courses are listed only from institutions requiring practically the completion of the standard high-school course for entrance. The bulletin is a result of an investigation of the conditions in each institution relative to the equipment for undertaking graduate work and the qualifications of instructors under whom the course is given. A supplement dealing with undergraduate courses in agriculture offered by the State colleges of agriculture has been printed for distribution in foreign countries for the benefit of students planning to come to the United States to study agriculture.

Mutchler, Fred, *and* **Craig, W. J.** A course of study for the preparation of rural teachers in nature study, elementary agriculture, sanitary science, and applied chemistry. Washington, Government Printing Office, 1912. 23 p. 8°. (U. S. Bureau of Education. Bulletin, 1912, no. 1.

Outline of the courses presented for this purpose at the Western Kentucky State Normal School, with explanations regarding the methods of presentation.

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EDUCATIONAL STATUS OF NURSING

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LETTER OF TRANSMITTAL.

Department of the Interior,
Bureau of Education,
Washington, D. C., February 23, 1912.

Sir: Within comparatively recent years the trained nurse has become an important and constant helper of the physician, not only in public and private hospitals, but also in the home, taking the place of untrained watchers who, however willing, can render only an ineffective service. This work of nursing has rapidly advanced to the position of a profession requiring careful preparation for admission. Thirty States of the Union have enacted laws for its regulation, and all the other States will probably do the same within the next few years. In several of the larger cities nurses are employed by the boards of education to visit the public schools, to look after the minor ailments of the pupils, and to assist in caring for their health. For the education and training of nurses, schools have been established and are maintained in most of the States. There are at present more than 1,100 such schools, with an attendance of approximately 30,000 students. For this reason, the education of nurses and the educational status of nursing have become questions of general importance and public interest, on which the Bureau of Education, in pursuance of the purpose for which it was established, should give information. The accompanying manuscript, prepared by M. Adelaide Nutting, is an attempt to do this. Miss Nutting was for several years connected with the Johns Hopkins Hospital School for Nurses, and is at present director of the department of nursing and health of Teachers College, Columbia University, New York, and has therefore had unusual opportunities to prepare herself for this work. I recommend that the manuscript be published as a bulletin of the Bureau of Education.

Respectfully submitted.

P. P. Claxton,
Commissioner.

The Secretary of the Interior.

EDUCATIONAL STATUS OF NURSING.

RECENT PROGRESS IN NURSING.

Although there have been no radical changes in methods of education in nursing during the past five years, there are yet substantial evidences of progress to record. Training schools for nurses throughout the country are steadily, even if slowly, effecting improvements in their work and conditions. The professional field of nursing is widening and embracing new and important activities, and offering new incentives to effort. Public interest in hospitals and training schools is growing, and an intelligent public opinion on nursing affairs is gradually forming. The education of nurses, long looked upon as a matter in which hospitals only were concerned, is now beginning to be seen as a matter in which the public also is deeply and necessarily concerned.

In training schools themselves improvement is shown as follows: Systematic instruction is steadily replacing unrelated courses of lectures, better facilities for teaching are provided, small libraries are beginning to appear, occasionally a microscope is secured, more time is allowed for teaching and for study, work is brought from the evening into the daytime. Little new subject matter is introduced, but the ordinary subjects are handled in a more thorough and comprehensive way, and there is a slight but evident tendency toward a better adjustment of theory and practice. In a very few schools higher standards of teaching and a better quality of work are secured through the introduction of specially trained teachers. Among the schools which have established such teaching positions are those belonging to the Johns Hopkins Hospital at Baltimore, the Massachusetts General Hospital at Boston, and St. Lukes, the Presbyterian, and Bellevue Hospitals, in New York. Perhaps the most conspicuous improvements are those providing better housing and living conditions for students, interesting examples of which are seen in the new, spacious, and attractively equipped buildings for students, recently erected by the Presbyterian, Bellevue, and Metropolitan Hospitals in New York and by the Children's Hospital in Toronto.

Affiliations between training schools continue, and are doing much to consolidate and strengthen the educational system, and to provide larger opportunities for many small and special schools in which good work, though of a limited nature, is done. These affiliations are serviceable so long as it is borne in mind that a group of affiliated weak schools does not result in a strong school.

A distinct evidence of progress is seen in the demand for postgraduate work. It is encouraging to find so large a number of graduate nurses seeking opportunities for further training and knowledge, but it is disturbing to note that their laudable demand can not be adequately met at present in most hospitals, since in order to secure a minimum of actual instruction they are obliged to perform a maximum of service for the hospital. There is great need of careful study of graduate work in nursing and of the organization of suitable courses to meet well-defined needs. Apart from the schools, but reacting constantly upon them in a way both stimulating and helpful, have been the steady advances in legislation; enactments governing the examination and registration of professional nurses are now on the statute books in 31 States. They have proved a powerful agency in promoting the better education of nurses and in bringing up the standards of training schools.

The most important evidence of progress and the most significant is the endowment in November, 1910, of a department of graduate work for nurses at Teachers College, Columbia University, New York. This is the outcome of a course in hospital economy established at the college in 1899 by the American Society of Superintendents of Training Schools for Nurses and maintained by them until 1910. Lacking, however, adequate financial support, the work could not be satisfactorily developed, and its endowment by Mrs. Helen Hartley Jenkins, a trustee of Teachers College, places the work upon a permanent and stable basis and opens the way for long-needed developments. The amount of the gift is $150,000, and it marks the first effort in this country to make suitable financial provision for any part of the education of nurses.

The department thus endowed is called Nursing and Health, the latter part of the title serving to indicate the scope of its work. It now embraces three main divisions of work and prepares, first, for teaching and supervision in training schools for nurses; second, for administration in hospitals and training schools; and third, for the more distinctly social and preventive branches of nursing, such as visiting nursing, school and municipal nursing, sanitary inspection, etc. Courses are appropriately grouped and arranged in preparation for each of these fields of work.

For the social field, courses in the college and university are supplemented by work in the school of philanthropy, in settlements, and in the municipal health department.

The requirements for admission to the department of graduate work are completion of an approved course in a secondary or normal school, followed by a course of two or three years in a training school of accepted standards. Thirty-five students entered the department last year.

The enlargement of the professional field is continuous. Not only has the specializing tendency of the day brought into existence new forms of activity within those branches—institutional, private, and social—in which nurses have long been engaged, but new types of work are developing, and entirely new social and public demands are being made upon the nurse.

Moreover, it is unquestionable that, however largely supply may exceed demand in other fields of work, this at present does not hold true of nursing, for even in the older branches of work, which have been longest established and are best known, the demand for properly trained and competent workers is beyond the supply, while for all of the higher and more important positions in hospitals and training schools, and for the equally important fields of social and civic work which are rapidly opening up, there is as yet no adequate supply.

In institutions, such as hospitals and training schools, where formerly the superintendent of nurses was the sole officer of administration and instruction (exclusive always of the instruction embodied in the courses of lectures by physicians), or where at most she had one assistant to aid in supervision and instruction, there will now, in most larger schools, be found a graded staff of assistants and supervisors. The double office held by the superintendent of nurses is now pretty generally recognized by the additional and appropriate title of principal of the training school.

An interesting outcome of the efforts to improve training schools by a better organization of teaching is found in the creation of new positions involving little or no executive work and providing a fairly well-defined field of instruction calling for trained teachers.

In addition to these important developments in training schools and in the nursing departments of hospital work, there is an interesting and growing field for graduate nurses in actual hospital administration, and the larger number of moderate sized, and almost all of the smaller, hospitals throughout the country select trained nurses as superintendents. In the State of New York the inspector reported recently that about 55 per cent of the entire number of hospitals answering to this description were under the direction of nurses. Other types of institutions are the various sanitaria for the treatment of tuberculosis, for the care of children, for convalescents, fresh air homes, and those of a kindred nature which are preventive in purpose as well as charitable, and which have frequently important educational features in their work.

The tendency toward specialization which is developing in institutions is also observed as a growing feature of private nursing, and there is an increasing call for nurses who have received some special preparation beyond that which the ordinary training school offers, for the care of certain special forms of disease—notably, for instance, the nervous disorders of different types, and certain diseases of infants and children where there are great disturbances of nutrition.

Dr. Lewellys Barker, physician in chief to Johns Hopkins Hospital, says of the development in these directions:

> On looking over the history of nursing, I have been very much struck with the rapid expansion of the work intrusted to nurses. It must be remembered that formerly physicians did, or tried to do, nearly everything which is now done by the nurse; even the care of the bed, of the linen, and of the bathing was formerly a part of the physician's work in the hospital wards. Nurses soon demonstrated that a large part of ward work could be better done by them than by physicians, and, more and more, routine measures have been placed in their hands. Anyone who works in a hospital realizes that this transfer of routine from the physician to the nurse is still going on and this may account for an occasional misunderstanding perhaps as to what is a nurse's duty and what a physician's. I believe that nurses will do well to welcome, rather than resist, every additional opportunity for service, and the time may not be far distant when nurses will not only count the pulse, take the temperature, record the blood pressure, sterilize instruments, prepare dressings, etc., but will do far more, including, perhaps, sometimes many of the routine laboratory examinations now made by physicians. Indeed, there is already a demand for trained nurses who can make leucocyte counts, hemoglobin determinations, quantitative estimates of sugar and albumin, and scientific dietary calculations and weighings.
>
> Thus far, nurses have, for the most part, been content to be general practitioners of nursing, but already some have begun to specialize, and it needs only half an eye to see that the near future will be marked by an extension of this tendency to specialization in nursing. While each nurse should have a general training in fundamentals of the art, there is no reason why she should not, like the physician, choose some one particular field of work which appeals to her interest and for which her natural talents may make her especially suitable. The time is fast approaching when we shall have nurses who attend chiefly or solely obstetrical cases, others who care only for pediatric cases, only for nervous and mental cases, only for fever cases, only for operative cases, only for metabolic cases, etc. Nurses who desire successfully to specialize will be compelled to acquire unusual training and experience, just as is the medical specialist. * * *
>
> Nursing is the one profession in which all, men as well as women, will admit that women excel men. It is highly desirable that a sufficient number of the women of the better class be attracted to this work. If we expect to draw the best women into trained nursing, we must do what we can to make the rewards what they should be. The pecuniary return is not the only one to be considered. The kind of education given, the social regard insured, the interests aroused, the careers opened up, are really more motivating than any mere monetary consideration. As long as nurses were drawn from the lower classes and as long as the training was merely manual and not intellectual, there could be no profession of nursing. Now that nursing is offering ever new incentives, the position of the trained nurse has become more elevated, the educational standards are high, the time of nursing has become long enough to permit of thoroughness without overtaxing, the material position of nurses is being improved, the opportunities for higher careers in nursing are multiplied, we find the profession appealing more and more to the best class of woman. (The Johns Hopkins Nurses Alumnæ Magazine, June, 1909, pp. 84–86.)

Nowhere, however, has the growth of opportunity for nurses been so great as in the field which may be broadly termed that of social welfare. Under the form and title of district and visiting nursing, a system of activities has been developed which makes of the nurse not only a skilled agency for the relief of suffering, but a teacher of sanitary and healthful living, and a power for the prevention of disease. This is looked upon as one of the most promising movements of modern times for social betterment.

Briefly reviewed, these various phases of work include ordinary district nursing among the sick poor, in which, according to Miss Waters' Visiting Nursing in the United States, there were engaged, in 1909, 566 associations, large and small, and something under 1,500 nurses. Recent reports bring the latter number up to nearly 2,000. The important special branches of this work are school nursing, tuberculosis work, infant welfare work in milk stations and clinics, social service work in hospitals, dispensaries, and elsewhere, and welfare work in factories, department stores, and other industrial and commercial fields; while insurance nursing, the most recent form of preventive work, does not separate itself from regular visiting nursing and may touch at certain points almost any phase of these various branches of work. Maternity and contagious work are very special branches too little developed apart from institutions to be included here.

The social-service departments, which have been recently developed in connection with many leading hospitals and which are largely under the direction of nurses, afford peculiarly interesting and valuable opportunities for public service. The term "social service" is made to cover many activities on behalf of the patient who may have just entered or just departed from the hospital; but the main purpose of this new department of hospital work is the definite one of doing for the patient, through proper channels and agencies, certain things which are essential for his physical and mental welfare, and which the hospital can not do for him unaided. It is the avenue through which the hospital seeks for the advancement or completion of its own work, for special expert diagnosis, advice, and aid in matters affecting its patients, but not necessarily physical in their nature.

If, in some directions, these activities seem remote from those fields of service for the sick into which the nurse is usually led directly from her hospital training, the fact that she has not sought them but that they have sought her shows perhaps that the education, training, and discipline of a nurse do prove a valuable preparation for other work than nursing—a solid foundation upon which to build in many special directions. The profession of nursing is here taking on fresh significance, and the nurse to-day who is concerning herself with that greatest of all human problems, the protection of the health of the people, represents a comparatively new idea. She is not a nurse in the usual acceptation of that term; she is a woman who has had the scientific training of a nurse, and her adequate use of this training will make of her an important factor in the progress of the human race. In the light of these new activities, which place new burdens and responsibilities upon her shoulders, her education becomes a matter of large significance.

In considering the activities of these new fields and their inherent needs, Dr. C. E. A. Winslow, professor of biology, College of the City of New York, says:

> All this requires obviously enough a highly trained and specialized expert. I have no knowledge of the requisites for "sick nursing," but it is quite clear that in public-health work the visiting nurse must be no empirically trained upper bedside servant. She must understand thoroughly the general fundamental laws of hygiene and sanitation, which means a mastery of the principles of physiology and bacteriology, and she must have a minute grasp of their special application in the field of her own work, whether it be school nursing, tuberculosis nursing, or infant hygiene. She must know these things not merely as a practitioner but as a teacher, which means not only a knowledge of details but a vision of their right relationship and a talent for effective presentation.
>
> Always there are the educational weaknesses inherent in an undertaking which is not primarily educational in aim. The course is apt to be carelessly planned, the teachers those who chance to be available, the teaching what they happen to find it easiest to give, and the laboratory equipment hopelessly inadequate. Most fundamental of all is the problem of time. It is absurd to attempt to train the nurses we need for the public-health campaign by a course which involves 2 or 3 hours a week of theory and 50 to 60 hours in the wards, not hours of clinical instruction, but for the most part a routine of unenlightening and exhausting manual work. The relation between the hospital and the training school should be a symbiotic one; it more nearly resembles a case of simple parasitism. ("The rôle of the visiting nurse in the campaign for public health," by C. E. A. Winslow. American Journal of Nursing, Aug., 1911, pp. 917–918.)

The extraordinary development of the work of the district nurse and its intrinsic importance have been admirably discussed by Dr. Henry Favill, superintendent of the Chicago Tuberculosis Institute. After pointing out that because of her essential adaptability to the situation, whatever it may be, the district nurse is wanted as school nurse, insurance nurse, industrial nurse, and in other different capacities, he says that in this visiting-nurse problem the great question now is that of expansion, which is inevitable; that we have arrived at practically an "impasse." He says:

> The point has been reached where the structure is greater than the foundation, and the foundations have got to be broadened to insure the stability of the superstructure. * * * Shall we follow the legitimate evolution of this medico-sociologic time or shall we set arbitrary definitions to which it shall be confined? And this is a question which faces us as a very important question, because no work which has in it the inherent values that are in this system of visiting nurse has any excuse for being jeopard-

ized by mistakes, and the obligations to settle this question wisely and broadly are enormous. (Address at twenty-fifth anniversary of founding of Boston District Nursing Association, by Henry Baird Favill, M. D. American Journal of Nursing, Oct., 1911, pp. 41–42.)

The evidences of progress thus measured are clear and considerable. They show definite achievement and unquestionable advance. There are, however, evidences of another nature to be weighed, which show that tendencies are not all in the direction of progress and that some are markedly subversive of it. Reactionary ideas have taken distinct shape in certain places, and destructive forces are constantly at work. Perhaps the most noteworthy and certainly the most interesting and dramatic instance in recent years of reaction working freely against nursing education was seen in New York in 1907, when, during a brief period, moved apparently by a common impulse, three important training schools, the New York, the Roosevelt, and the New York City, abolished the three years of training which had been in operation for several years and returned to the original course of two years, abbreviating the curriculum to correspond and making other radical changes. This movement seemed to be the outcome of distinctly local feeling. It was limited to a few institutions and does not appear to have had any effect upon the general situation.

The condition in training schools which is causing grave concern among those who have long been struggling to improve the education of nurses is the persistence of low standards for admission. The enormous multiplication of hospitals and sanitaria throughout the country, with the consequent unrestricted development of training schools as a part of their working organization, has led to a very large demand for students essentially for utilitarian purposes. No adequate supply could be secured through the usual sources with the maintetenance of suitable standards, and such standards have therefore been lowered or sacrificed to meet the current needs of institutions. Overwhelming evidence is available from training schools and from public and private sources showing the inferiority from almost any conceivable or tenable standpoint of the majority of present candidates for admission to training schools. Some readjustment is needed of the conditions under which students work. Some reconstruction is imperative of a system of education which was admirable when it was established 50 years ago, for other educational advantages were then not available. But it is out of right relationship with the thought and methods of education to-day.

The subject is discussed in detail in the following pages, with some suggestions as to the direction which these changes should take.

RELATION OF TRAINING SCHOOLS TO HOSPITALS.

It should constantly be borne in mind, in discussing the education of nurses, that training schools throughout this country are established as integral parts of hospitals and are conducted in all their functions under the control and general direction of hospital authorities. Recent statistics from nearly 700 training schools show that not more than 6 of them were established on any other basis than this, and that the hospital and the school are, as one response to the question on this subject stated, "all one." All schools are therefore in one sense proprietary. The system is universal, and it has become so for several reasons.

The first and most obvious reason, and the one most generally advanced, is that the school forms the most economical way by which the sick in the hospital can be nursed with a reasonable degree of efficiency. Under almost any conceivable conditions in hospitals this would probably hold true, and it is unquestionably a strong factor, perhaps the controlling factor, in the entire situation. But it should not be accepted as the only one. After giving the fullest recognition to this important aspect of the situation, after according due weight to the advantages which this school system provides for proper organization and direction of nursing work and for control of the workers, there yet remain other and less tangible reasons which should none the less be considered. There is something in the spirit which the young student brings to her work, the ardor and enthusiasm in acquiring new and wonderful knowledge, and in testing her daily increasing skill, which is a genuine and valuable asset to the hospital. It is indeed a matter of history and of fact unquestioned to-day that the hospital owes much of its present status, its position in the community, and its powers in many important directions, to the presence within it of an organized body of women whose prevailing characteristics have been and are of a high order. The search will be long before there will be found any body of persons, either students or workers, animated by higher ideals of service, guided by nobler traditions of duty and devotion, willing to render a larger measure of self-sacrificing and courageous labor for others. The standing of a hospital in a community may usually be measured by the character of its nursing staff, and if it desires to prosper and to progress it must always be able to stand the test in that direction.

To preserve these high ideals and traditions which the founders of the early training schools established and their followers have tried to uphold and cherish, and at the same time to add to the value and maintain the dignity of nursing by fostering its every effort toward larger intellectual growth, toward more definite educational standards, as well as toward increasing skill and technical efficiency, are the important functions of the modern training school. Any conditions, therefore, in the hospital or out of it which affect or threaten to affect the training school to the injury of these ideals, traditions, and standards become of immediate and direct importance to the hospital, as well as to the entire community.

It is therefore with the interests of the hospital in mind, as well as the interests of students and the public whom they will eventually serve, that some of those who have been for many years studying closely the problems of nurses' education are asking if the present system which has finally placed the hospital in full and unquestioned control of the education of nurses will prove favorable to the best educational growth and development, to the preservation of those high traditions, standards, and ideals which, important in all professions, are essential in nursing. It is the belief of many of those who have long been identified with training-school and hospital work, and who have been largely instrumental in creating and upbuilding in both hospital and school such educational standards as now prevail, that the principle of absolute control by the hospital is unsound and that in practice it does react unfavorably upon the education and training of nurses. It is their belief that this system of control affects profoundly the essential matters of standards of admission, hours of work, length of course, conditions of student life, and, above all, the freedom of the school to develop the education of nurses in response, not only to the current needs of a particular institution, but to changing and growing social needs in the community in which the educated nurse plays an increasingly important part.

The attitude of the hospital to this principle, however, is clearly defined in the statement here quoted from the report on training schools recently published by a special committee of the American Hospital Association. "The committee has tried to consider the interests of the school apart from the hospital wherever possible. At the same time the committee recognizes that the training school is an integral part of, and subordinate to, the hospital." (The International Hospital Record, Sept. 15, 1909, p. 9.) And as if in proof of the soundness of this contention history points to the early training schools of this country, Bellevue in New York, the Massachusetts General in Boston, and others of a later date, such as the Albany (N. Y.) Training School, which, originally established by bodies outside of and independent of the hospitals, were unable to retain that status and have found it necessary to place themselves wholly or largely under hospital government.

In order that the full value of the school to the hospital may be more clearly understood, it should be explained that an actual nursing staff for the hospital is created by the establishment in it of a school of nursing, and, through the organization of its student body into a corps of workers of various grades—probationer, junior, senior—adjusted to the varying needs of the hospital. The hospital itself becomes the school, and the actual daily and nightly routine of work in its wards and other departments stands for a system of education. The supervision which would ordinarily be required for the proper conduct of the work becomes a form of instruction; the supervisors or head nurses are, as a rule, the instructors; the superintendent of nurses is also the principal of the training school. The entire burden, in fact, of the actual care of the sick and of their immediate surroundings rests upon the students of the school; and in many hospitals, particularly those of moderate size, the students are also filling executive official positions as head nurses, assistants, night supervisors. In these capacities they are responsible for the supervision and direction of the work of younger students and for much of their practical instruction. Under such a general system the training of nurses has been carried on during the 40 years that have elapsed since the schools were first established in this country; under it to-day about 30,000 students are being trained, and the idea is now firmly entrenched in the public mind that the only available way by which the hospital can secure an adequate nursing staff for its patients is through the student body of a school which the hospital establishes, owns, and controls.

The immediate advantages of this system do not lie wholly with the hospital, for the student receives, without incurring any expenses for tuition, board, lodging, laundry, and usually uniforms, such education and training as the hospital is prepared or willing to offer, and this, even when poor in character and meager in amount, is always of definite material value to her, enabling her as a rule to become self-supporting as soon as she leaves the hospital.

PAYMENT TO STUDENTS.

In the majority of schools the student's services to the hospital are distinctly recognized by the payment of a small sum of money monthly, stated to cover expenses of uniforms and textbooks, but ordinarily more than double the amount needed for these purposes. It is estimated that expenses for uniforms and textbooks do not usually exceed $50 per student annually, while the sum of money provided students for this purpose is seldom less than $84 per annum, and it frequently goes as high as $120 per annum. Formerly these money payments were higher, ranging from $120 to $180 annually, and were not infrequently referred to in the announcements as wages. But of late years the amount has been gradually lessened, until $8 a month appears to be the sum given in the larger number of schools. Recent reports show that in 24 schools, largely those of high standing, the practice has been abandoned altogether, and the money thus released is applied in some measure to improvements in educational methods. Its essential obligation to the student, the hospital does, however, clearly recognize, as is shown by the statement commonly found in training school announcements that an ample equivalent for the services rendered by the student is provided in the education and training offered. What that equivalent shall be is naturally determined entirely by the hospital, which has thus established an educational system and assumed educational functions.

The hospital of modern days, with its improved facilities for the treatment of disease and emergencies, in the way of physicians, nurses, buildings, and equipment, has become a popular institution, and no community, however small, likes to be without resources of this nature. Physicians, realizing the better opportunities which the hospital usually offers for the exercise of their skill and for the recovery of their patients, press its advantages, and a change in public sentiment toward the hospital has gradually come about which has resulted in a remarkable increase in the building of such institutions. This is especially marked in the smaller towns and communities.

TYPES OF HOSPITALS.

In type, character, and capacity, as well as in aims and purposes, these modern hospitals show the widest variations. In type there will be found a long list of institutions, including: (1) The large municipal hospitals for the treatment of all classes of disease and of patients (with the exception of private paying patients); (2) the large, endowed hospitals, such as are found in some numbers in all of our large cities, general in the scope of their work and treating all classes of persons; (3) the smaller hospitals of a somewhat similar type in the smaller towns and communities; (4) the special hospitals, such as those devoted especially to (*a*) surgery, (*b*) emergency work, (*c*) obstetrics, (*d*) nervous disorders, (*e*) diseases of women, (*f*) diseases of infants and children, (*g*) diseases of the special senses, namely, the eye, ear, throat, and the skin, (*h*) tuberculosis, (*i*) contagious and infectious diseases, (*j*) chronic and incurable disorders, and (*k*) convalescents. These may be maintained by public funds for the benefit of the public, by private contributions for the same purpose, or by private capital for private profit.

HOSPITAL CAPACITY.

In capacity the variations are naturally very great. Statistics on this point show that in 692 hospitals reporting to the Bureau of Education the range is (exclusive of State institutions for the insane) from 5 beds up to 500. About 60 per cent of the entire number have a daily average of under 75 patients, and 172 hospitals, or about 25 per cent of the whole number, have a daily average of not more than 25 patients.

The capacity in these hospitals is as follows:

	Hospitals.
4 to 10 patients daily were found in	39
10 to 15 patients daily were found in	43
15 to 20 patients daily were found in	58
20 to 25 patients daily were found in	32
Total	172

Thirty-nine hospitals did not reply to this question.

RELATION OF CAPACITY TO AVERAGE NUMBER OF PATIENTS.

The average daily number of patients is used here rather than the stated number of beds because it has been found after careful study and comparison that the number of beds is no true guide to the actual daily number of patients. This average daily number of patients in nearly 50 per cent of hospitals of the class referred to has been found not to exceed one-half the hospital's capacity in number of beds; in about 75 per cent of these hospitals the average number of patients daily was not over three-fourths of the hospital's capacity, and in no instance in this group was the hospital used apparently up to its stated capacity in beds. In all but 5 of the 172 small hospitals (averaging 25 patients daily or under) training schools were maintained, and 100 of them required three years for the completion of the course of training. To the suggestion that probably some of these affiliate with larger hospitals, the answer is that 31 hospitals reported some such arrangement covering from 3 to 6 months, but that 115 hospitals out of the 172 had no affiliations, and the remaining number overlooked the question on this subject.

The number of beds in a hospital has an important bearing upon the educational facilities it offers. Taken in connection with the varieties of service, the number of beds affords some idea of the scope of work in a hospital, of the amount and variety of opportunity which it affords for the observation and study of disease and for training in the practical procedures in nursing.

The ability of the hospital to give a thorough and complete training in nursing rests then mainly upon two conditions: First, the character, variety, and extent of its service; second, the state of its finances. The first condition determines whether or not it affords suitable and sufficient opportunities for instruction and training; the second indicates its ability to provide suitable instructors, equipment, accommodation for students, and other appurtenances of a school. If the hospital treats medical, surgical, and obstetrical patients, and admits children as well as adults of both sexes, it comes under the head of general hospitals, and as such may be considered a suitable ground for the general training and education of nurses. It is obvious that the question of numbers must be considered here, and that the very small hospitals, even though some of them may justly claim to be general in the scope of their work because they treat all classes of cases, are too restricted in actual numbers of patients to afford the requisite opportunities for observation and experience.

REQUIREMENTS IN CAPACITY FOR MAINTAINING TRAINING SCHOOL.

The New York State Education Department, in its registration of nurses' training schools, states that—

> the hospitals with which such schools are connected must have not less than 50 beds and a daily average of 30 patients. Each bed must meet the requirements of the State board of charities as to air space. The hospital should provide experience in the following departments of nursing: Medical, surgical, obstetrical, and pediatric. Training schools connected with the hospitals not providing adequate opportunities for experience in all of the above departments must become affiliated with institutions approved as giving such experience. (Education Department, Bulletin, Albany, N. Y., July 1, 1911, p. 5.)

The committee on training schools of the American Hospital Association, in considering this question in a recent report, says:

> It is the sense of the committee that hospitals of less than 25 beds which can not affiliate or maintain some association with larger institutions, on account of their isolated or financial condition, should not attempt to maintain training schools for the training of nurses. (The International Hospital Record, Sept. 15, 1909, p. 8.)

The Royal British Nurses' Association recognizes hospitals having 40 beds and upward as qualified to train nurses and excludes the rest. Other advocates for nurses' registration in England are pressing for a rule excluding all hospitals below 50 beds from this privilege. (The Hospital, London, Oct. 24, 1908, p. 103.)

The national committee on Red Cross nursing service has taken a similar stand, and at its regular meeting in Boston, June 1, 1911, decided that "only those nurses should be eligible for enrollment who are graduates of training schools connected with general hospitals of at least 50 beds, unless the applicant has had subsequent hospital experience or postgraduate work." (American Journal of Nursing, Sept., 1911, p. 1033.)

Such a minimum requirement as has been established in New York State is a definite gain, in that it recognizes the necessity of some standard where educational work is carried on. The minimum is still low, however, and should be so considered. The difficulty in exercising any real control in this situation is great, since, although it is not so stated, the small hospital, as a rule, does consider itself helplessly dependent on the training school to carry on its work.

Dr. Henry M. Hurd, of the Johns Hopkins Hospital, puts the matter very clearly in a recent article. He says:

> In some of these smaller, unendowed hospitals, to procure graduate nurses for their service might incur an outlay which would imperil the very existence of the hospital. Hence the need of a training school for nurses with a small salary roll, instead of a large one. ("State registration and the education of nurses in the United States." The Nursing Mirror, London, Apr. 17, 1909.)

SPECIAL HOSPITALS.

Specialization in medicine has led, naturally, to the development of special hospitals or sanitaria designed to treat either a particular form of disease or a particular class of individuals. Examples of this type may be found in those special hospitals for the treatment of women. Such institutions have been springing up rapidly for years in all fairly well settled parts of the country, and now exist in large numbers. The majority of these are purely surgical in nature, frequently limited to gynecological disorders only, usually small in capacity, owned and managed by a physician or a small corporation, and, as a rule, devoted exclusively to private, paying patients. They are essentially commercial in character, intent, and methods. About 16 per cent of the 692 hospitals reporting to the Bureau of Education came under this classification, in that they were special, or private, or both.

As regards essentially private institutions, devoted to the care of paying patients, affording, for training, meager opportunities in a restricted field, it would seem as if the question of a school for the education of nurses could hardly arise; yet, private and special hospitals and sanitaria of this type, in numbers, have not hesitated to announce themselves ready to receive pupils and meet the obligations which a school of nursing involves. Such special branches of work as these hospitals offer are frequently found as a part of the system of a general hospital, and in these it is considered that from four to six months affords ample time and opportunity for training the nurse in any one such branch, the briefer period named being the commonly accepted period. Longer training in such special branches of work is only recommended in those cases where the student, after having received the full general groundwork, wishes to devote herself solely to a special field of work, such, for instance, as surgical nursing, or obstetrics, or the care of patients with nervous disorders, or the care of children. Yet a course of training for nurses covering three full years is quite commonly found in hospitals of the special type.

UTILIZING STUDENTS.

Not only is all the general nursing in these hospitals done through the services of the students, but in certain instances the students themselves become an actual source of direct and considerable profit to the institution. This happens when the student enters such a private hospital for two or three years and is placed at a very early stage of her work upon special duty with a single patient, a considerable fee being charged for her services. In some instances it is said that pupils are kept at such special individual work during the greater portion of the course of their so-called training, the fees for their services going directly to the management.

But this does not exhaust the methods by which hospitals can utilize for their own profits the services of their students.

Out of the entire 692 hospitals from which statistics were recently received, 248 were found sending out their pupils into families in the community for private nursing, for periods ranging from 2 to 26 weeks, the payment for this service in almost all instances going directly to the hospital. It was difficult to secure explicit information as to the amount of time which student nurses really are devoting to outside work of this nature. Fifty-nine hospitals stated that they sent out their students, but omitted any reply to the question asking about the average amount of time in which the student was so occupied, using merely the vague but suggestive phrases "time varies," "as needed," or "subject to call."

It can be readily seen how the effort to guard the education of nurses by suitable legislation would interfere with such exploiting of the pupil nurse, and it is a well-known fact that the most persistent opponents of such legislation in the various States have been found among those representing such hospitals—those whose financial interests were involved in maintaining the status quo.

There are schools which include in their curriculum a brief course in visiting nursing, and certain students may elect this work among the sick in the poorer districts. This is always done without payment of any kind.

There are also occasional instances of emergencies in small communities where fully qualified nurses are not readily available, which may be temporarily met through some member of the nursing staff of the hospital. Such instances as these are not included in the situation above described. This discusses the practice of sending out pupil nurses during their training to earn money for the hospital, and urges that as a practice it can not be too strongly condemned.

HOSPITAL FINANCES.

Assuming, however, that the hospital is neither special nor private, nor so very small as to be unserviceable, that in type, character, and capacity it affords a suitable ground for the training of nurses, there should, it would seem, be some assurance that it is financially able to carry the double burden of a hospital and a school, that it can meet the expenses of its own work, and in addition can provide in some reasonable measure at least for the common fundamental needs of a school.

Now, it is not generally understood what extraordinarily expensive places hospitals are to maintain; the work in them goes on unceasingly day and night, and service must be provided accordingly. The service must be in the main of an exceptionally high type, there must be certain trained and skilled workers, the appliances are almost invariably costly in nature, the equipment must be liberal enough to meet any emergency, it must stand the wear and tear of use for 24 hours out of the 24. The food ought to be the best in quality, the best and purest milk, the freshest eggs, good meats and vegetables and fruits; drugs, disinfectants, and dressings are costly, and their use is enormous. While every hospital should be watchful of expenses, too rigid economy in any one of the above matters may defeat the very purpose of the institution. The majority of hospitals are engaged in a constant struggle to make ends meet, and it is rare to hear of one that has an income large enough to fully and satisfactorily meet its legitimate expenses. How, then, can it adequately meet the equally legitimate expenses of a school? It has no margin for educational needs, and hospital authorities confronted daily with the pressing problem of actual necessities in the way of accommodation, food, clothes, drugs, appliances, and equipment are often and not unnaturally impatient with requests from the head of the training school for proper consideration for the needs of her department.

To pay for instructors, books, teaching material, and other of the simplest necessities of a school, in the face of these imperative hospital demands, seems to them an unjustifiable action. In the larger hospitals it is usually done with reluctance and inadequately; in the smaller it is usually not done at all. Yet schools can not exist without instructors, without libraries, without classrooms, without teaching material.

VARIATIONS IN HOSPITALS.

With hospitals of many types already existing, with a tendency toward increasing specialization so clear that the development of new types seems inevitable, with wide variations in capacity and in variety of service even in those of the same type, and with essential differences in character and methods of work, the difficulty of maintaining any serviceable uniformity in standards in the education of nurses is not only formidable; it is insurmountable under present conditions. The "equivalent in education" which hospitals offer their students must in the last analysis be determined, not by definite, recognized, and generally accepted standards, but by the ability of each particular hospital to measure up to such standards, and to provide adequate educational opportunities, by its sympathetic interest in the general problem of education, and by a full acceptance of its responsibilities and obligations in the educational work it has undertaken.

RELATION OF HOSPITAL TO ADMISSION REQUIREMENTS IN TRAINING SCHOOL.

At the very outset, the hospital demonstrates its unfitness for this responsibility in the control it exercises over the selection of candidates for admission to the training school. The first function of the school is the establishment of certain definite suitable requirements for admission, but the school, it must always be remembered, is the nursing staff of the hospital. The first function of the hospital is to secure enough workers of various grades to meet its daily needs, always immediate and urgent. Numbers of students it must have, whether or not they meet such standards for admission as the school, to retain its function, should maintain.

So long as there were few hospitals requiring students, and few professions other than teaching and nursing open to women, there were many more candidates for admission to training schools than could be received; a fairly rigid system of selection prevailed, and those who entered and remained were well qualified to meet the educational and other tests and demands of the day. But with the remarkable advances of recent years in medicine and surgery, aided by a quickening of social and philanthropic spirit widespread in its dimensions, hospitals have not only arisen in great numbers in every section of the country, but those already in existence have been steadily enlarging and expanding, and a continuous improvement and elaboration in work and technique is taking place. One thousand three hundred and sixty training schools are recorded in Sutton's Hospital and Institutional Directory for 1910. With this rapid growth in many directions has come a constantly increasing demand for students, and there is now great difficulty in securing enough to meet the needs of the hospital and at the same time maintain even the most moderate requirements for admission. There are, it appears, not only too many hospitals in competition for the existing number of qualified candidates, but there are too many other interesting and less arduous occupations open to women to enable nursing, under present conditions, to hold its own as an attractive field.

With very few exceptions, all hospitals, large and small, alike confess a great and increasing difficulty in securing enough students to carry on their nursing work. This is a matter of common anxiety among training-school superintendents and principals, and it is obvious that the difficulty in this direction is serious, is growing, and that it offers a great problem. The only way in which it appears to be possible for the hospital to deal with it, is by lowering still further the requirements for admission, already far too low, or by simply ignoring them altogether.

The superintendents of several important schools frankly admitted to the writer not long since that they had been obliged, in order to get enough pupils to do the work, to bring into their classes entering that year a considerable number of students who ought not to have been admitted, owing to their inability to measure up to any satisfactory educational or cultural standards. Their reason for admitting these undesirable candidates was simply the necessity of getting the work in the hospital done.

CANDIDATES AND COURSES OF STUDY.

PRELIMINARY EDUCATION OF CANDIDATES.

Further evidence of the difficulty of securing students is the fact that in the State of New York, where the requirement has been made of one year of high-school work for admission to training schools, the efforts to have that one year removed as a requirement have been persistent and have come from some of the most representative hospitals. Their need for a large staff of workers is imperative, and it overshadows completely to them the need of the school that its standards shall be maintained.

It is not assumed that these representative training schools could not attract a fair number of students of even much higher qualifications than those stated in the requirements (the following statistics show that they can do so), but it is certain that they are unable at present to attract enough to supply adequately the needs of the hospital, and it seems tolerably clear that the principle of dependence upon the student body for all of the actual nursing work, and for a very considerable amount of other work, some purely domestic in nature, some supervisory and executive, is so universally accepted and so deeply rooted as to render hospitals generally unwilling to tolerate any conditions which affect this principle and which require a modification or frank abandonment of the plan and system upon which it is based.

Educational qualifications of 303 students forming the classes admitted in 1910 to 7 representative training schools in New York City.

Education.	Number of students.
College:	
4 years	10
3 years	....
2 years	2
1 year	3
Normal school	20
High school or collegiate institute:	
4 years	107
3 years	24
2 years	44
1 year	14
Private schools (from 1 to 3 years)	58
Academy	2
Common or grammar (supplemented in some instances by a business course or some instruction in domestic science)	19
Total	303

The points to be noted in the above are that the proportion of students who fully meet the highest requirement that has yet been made for admission in any training school, namely, high-school graduation, is not far below 50 per cent, but that of the remaining number over 25 per cent fall definitely below any suitable standards upon which a sound professional education can usually be built, and, further, that the degree of attainments presented by these students shows such wide and striking differences that the question at once arises, how is it possible to work out any uniform educational standards in nursing when handicapped at the very outset by the impossibility under present conditions of establishing and maintaining any uniformity in standards or requirements for admission. In any entering class of students in a training school of good standing will be found all the degrees and shades of educational preparation, such as are included in the reports of the seven New York schools, and still more clearly are they shown in the following statistics concerning the educational qualifications of students in the Johns Hopkins Hospital training school for nurses for a period of 16 years.

Educational qualifications of training school nurses in Johns Hopkins Hospital.

Years.	Common school.	High school and collegiate institute.	Private.	Convent.	Seminary.	College.	Normal.
1891	2	5	3	1	2	3	....
1892	1	3	10	2	1	3	....
1893	13	5	7	2	2	4	2
1894	....	....	....	....	....	....	....
1895	7	11	7	1	1	4	3
1896	5	18	7	5	4	2	1
1897	1	7	5	1	3	4	....
1898	....	3	4	2	1	2	....
1899	2	10	7	1	3	3	....
1900	8	11	7	1	2	3	1
1901	2	9	6	1	1	4	2
1902	5	12	10	3	2	3	....
1903	2	10	4	1	4	3	5
1904	2	9	7	2	1	6	4
1905	2	14	2	....	5	8	....
1906	3	9	1	1	5	12	4

Women whose actual formal education has not gone beyond the common school, and has ended at the age of 13 or 14 years, or who have had but one year of high school, or one or two years in private school or convent, enter training schools on identically the same terms as do women bringing a college degree. The students enter the same classes and take precisely the same courses; no recognition or credit is, as a rule, given the college woman for the higher qualifications she presents or for previous work done, yet curiously enough in the announcements of most training schools will be found the statement "women of superior education preferred."

From the reports of 692 training schools made in 1911 to the Bureau of Education, it appears that about 35 per cent of the total number state a requirement of "high school or its equivalent;" about 23 per cent call for one year of high-school work (or an equivalent); 28 per cent call for nothing beyond the common school; the remaining 14 per cent either make no educational requirements whatever, and say so in unmistakable terms, or indicate merely a preference. It has been found that the equivalent of high-school work either of four years or one year must be interpreted with great liberality, so much so, in fact, that the former may be said to have little real significance in the majority of schools as a requirement for admission.

The large, best-equipped, and well-known schools naturally attract the most desirable candidates, yet not one of them is exempt from the necessity of admitting and keeping in the school pupils of pitifully low educational attainments and mental ability in order that there may be no disturbance or breakdown of the system which requires the hospital to be "manned" at all points throughout its departments with student nurses. In the smaller hospitals the situation is in the main much more difficult and pressing, and the principals of the larger training schools are not infrequently appealed to by their colleagues of the smaller to pass on to them candidates who have failed to measure up satisfactorily to the standards of the larger school.

The ultimate effect of the lowering of educational standards for admission to training schools is thus discussed by Miss L. L. Dock, honorary secretary of the International Council of Nurses. (A letter to hospital superintendents, by L. L. Dock. National Hospital Record, Jan. 15, 1909.)

> The plea for laxity in preliminary educational standards, low entrance requirements for hospital training schools, and even for shorter terms of training, is often made with great skill of argument, and can be so presented as to sound extremely plausible, especially when present difficulties, graphically portrayed and emphatically dwelt upon, are placed well to the forefront of the statement.
>
> Yet it is a singularly shortsighted plea—that of providing at all costs for the present without reflection as to the future. It is, indeed, an unstatesmanlike type of mind that can advocate a deliberate choice of lower, instead of higher, standards of education, because this kind of policy tends ultimately to self-destruction. It is like the pit that one digged and into which he himself fell.
>
> Those who live in social settlements, where there are many opportunities to observe the curves of social tendencies, see daily evidences that the way for an inadequate and superficial education lies along the path of least resistance. No special pains are needed to induce people to be poorly educated; precisely the opposite, indeed, is the actual case. What with struggle for existence on the one hand and the weight of inertia on the other, those who will be standard bearers for worthy educational ideals and human progress must wage the most unremitting warfare that peace knows.
>
> Our hospitals to-day employ in their services so large an army of young women that their indirect influence on common school education is very great indeed. If they will continue to demand applicants of good preliminary education, the whole cause of popular education will be materially strengthened; but if they should slip down to the basis of the primary grades, and be satisfied with that plane on which children of 14 are allowed to go into industry, they will deal a serious blow to education.

It can hardly be denied that the immediate effect of a ruling on the part of all hospitals to accept, in the near future, only those applicants who have had the equivalent of a high-school education, would be to stimulate a steady procession of girls into the high school; for, after all, even the most determined pessimist can not, as yet, show that the majority of the families from which nurses come are too poor to send their daughters to school, if there is a good and practical reason why they should go.

Nor, on the other hand, can the discouraging effects of a contrary step be denied, for the world is full of the proofs of inefficiency resulting from meager education, which, in turn, is directly traceable to low ideals.

It seems plain that here is an ethical obligation of the hospital to society of a very real nature and far-reaching extent, the more so as hospitals do not rank themselves among the "soulless" corporations that seek only material gains, but claim place among the forces that make for a higher civilization and an ampler distribution of the blessings of science. From the more selfish point of view, too, it would seem suicidal for hospitals to retrograde in educational ideals, for, as they are themselves entirely dependent upon an enlightened public for their support, they would help to cut off their own source of supply by helping to bring about a falling estimate of educational requirements. If, again, hospitals should generally accept a low standard, but other lines of occupation and skilled callings should steadfastly maintain high ones, then one of two things must result, both equally discreditable to the hospital, namely, either it must be permanently satisfied with the inferior grade of worker, with the accompanying loss of its own prestige, or it must reap the advantage made possible by the uncompromising high ideals of other callings, by which a generally good standard has been sustained; in other words, the hospital will reap where it has not sown—at the best, a shabby deed.

There was a time when hospitals were quite without influence in matters of general education. That was in the day of the untrained nurse or attendant, whom some of our reactionaries would like to bring back. Strange that in those days no one was satisfied, the public least of all. After all, as a country we believe in education; indeed, we stand for it. It is one of our corner stones. Is it, then, really respectable for men of any standing to maintain that the "equivalent" of the first high-school year is too much to exact of women who are to be intrusted with responsibilities of life and death? Should we not be ashamed to assert that a primary education is enough for hospital probationers, or that three years is too long a time for the training of a nurse, though it is not long enough for a complete knowledge of horticulture?

The thing of real importance is not that nurses should be taught less, but that all women should be taught more; not that courses of training for any serious work should be shortened, but better filled.

The arguments in behalf of lower standards are usually commercial arguments, and are, to persons familiar with the shibboleths and battle cries of the industrial struggle, ludicrously identical with those that are put forward in defense of forest and soil destruction, waste of natural resources, child labor, and other self-destructive policies. The correctness of this statement may be easily verified by the most casual reader.

The perennial widow who is compelled to depend on the wages of young and undersized boys, is the same piece of stage property as the excellent and competent nurse who possesses every known virtue but no education to speak of. One must ask why, as this excellent woman could not in any event be admitted to hospital probation until she is at least 19, should she not be encouraged to go to school until that time?

Long experience in the daily urgency of getting hospital work done, and the often unavoidable necessity of retaining probationers of elementary education, has but served to convince that it is more wholesome in the long run to hold a standard sufficiently high to act as a stimulus, even if one often consciously falls below it, than to be satisfied with one which is nothing more nor less than an indorsement of the status quo.

The present is urgent, but those in places of responsibility and authority have not the moral right to ignore the future.

AGE OF CANDIDATES.

Until the last few years the general age requirement for admission to training schools was 23 years, and it was only in exceptional instances that students were admitted under that age. But of recent years, in the effort to secure enough students to staff the hospital, this age requirement has been steadily lowered until now in the majority of schools (55.20 per cent) students are admitted at 20 years or under, and in 13.15 per cent of all schools they are admitted at 18 years of age. A further descent may be perhaps foreshadowed in the record of the two schools admitting that they receive students of 17 years of age. The age requirements in the various schools are as follows:

	Schools.		Schools.
17 years	2	23 years	12
18 years	91	24 years	1
19 years	48	25 years	7
20 years	241	No definite age	10
21 years	255		
22 years	25	Total	692

While there is little reason to suppose that the age standard could in the present day, be kept at 23 or even 22, yet it is a grave question whether the admission of young, immature girls of 18 and 19 to hospital wards, and to the heavy physical demands and the overwhelming responsibilities and anxieties of such work as inevitably awaits them there by day or by night, should be considered. No school dare assume that it will be able to provide influences and safeguards strong enough and far-reaching enough to protect either patient or pupil under those conditions.

There are undoubtedly a few schools in the country able to maintain suitable age standards, but the statements which have been made refer to the general situation and not to a few special instances.

CHARACTER OF WORK FOR STUDENTS.

There are certain measures which hospitals could adopt without any very great delay which would greatly relieve the present situation and check to some degree the constant flow into training schools, and thence into the community, of applicants who are fundamentally unfit for nursing, not only because of their limited general education and immaturity, but because of genuine defects in temperament, character, and habits. Hospitals, generally, could and should begin to accept the idea that a considerable proportion of actual nursing work must be paid for. Such official, executive positions as those of head nurse, supervisor (for day or night), and assistant should be filled not with students, but with graduate nurses carefully selected because of their fitness for the posts they are to occupy. They should be paid a proper salary, and provision should be made in certain institutions in America, as has long been done in England, for an additional salaried body known as staff nurses. Beyond this, a sufficient number of employees should be provided to release the students from the performance of much of the common domestic service which pupil nurses are in nearly all hospitals daily performing. The students should of course be taught thoroughly how to do such work in order that they may know how to maintain proper surroundings and conditions for their patients, but it is a great waste of students' precious time to keep them for years repeating routine tasks of a purely domestic nature and of no educational value whatever. These suggested measures alone would substantially reduce the number of students now required to be admitted yearly, and would enable the schools to reject a considerably larger proportion of those falling below suitable standards.

HOURS OF WORK FOR STUDENTS.

The introduction of these measures, particularly that providing for a nursing staff independent of the student body, would also if properly carried out render important services to the training school in other ways. It would enable the school to shorten the hours of work for students, or, in the language of the hospital, "hours of duty." These long hours have always formed a persistent and at times an apparently immovable obstacle in efforts to improve the education of nurses and to establish a rational adjustment of practice to theory. A brief study of hours of work in 111 hospital training schools made by the writer in the year 1896 ("Working Hours in Training Schools," by M. A. Nutting, Report of American Society of Superintendents of Training Schools for Nurses, 1896, pp. 31–39) showed that at that time in very nearly two-thirds of these training schools throughout the country student nurses were on duty for 10 hours and over daily. The hours of night duty were found to be 12 hours in 70 per cent of the schools, and in the remainder they exceeded that number and ranged from 13 to 13½. In no instance were these hours found to be under 12.

The entire course of training at that date was in all schools in this country two years or under (the one exception was the training school of the hospital of the University of Pennsylvania, at Philadelphia, which adopted the three-year course in 1904), a condition which should be considered in discussing the working hours of students. Ten or more hours a day in addition to class work and study might be endured for a period of two years without obvious or immediate injury to health. The same hours carried on for three years would prove a serious strain upon the student's physical resources, inflicting perhaps irreparable injury. The conclusions reached in this first study of working hours of students were that they were universally excessive, that their requirement reacted injuriously not only upon the students, but eventually upon the patients and the hospital, that it was a short-sighted and unjustifiable economy in hospital administration which permitted it to exist. Fifteen years later, statistics show that though the course of training has now in the great majority of schools been lengthened to three years, shorter hours of work have not generally accompanied this change, and that progress in that direction has been slow and unsatisfactory. Nearly half (45.4 per cent) of the entire number of hospitals reporting on this subject still require a working day of 10 hours and over. The following statistics are from reports received recently by the Bureau of Education, and presented with them for comparison are statistics on the same subject in 1896.

Hours of duty in 1911 and 1896.

Hours of duty.	Schools in 1911.	Schools in 1896.
8	69	2
8½	43	0
9	239	11
9½	26	29
10	220	14
10½	0	32
11	22	3
11½	0	14
12	44	3
More than 12	0	3
Hours not given	29	... .
Total schools	[1] 692	[2] 111

[1] Percentage under 10 hours in 1911, 54.6.

[2] Percentage under 10 hours in 1896, 37.8.

In speaking of hours it must be remembered that these statistics refer only to practical work in ward, clinic, operating room, or other hospital department, and not to any portion of theoretical work; that the 10 hours in question are required of the student irrespective of lectures, class, or study. This practical work, also, is in many of its aspects unusually exacting and fatiguing; much of it is done while standing, bending, or lifting; much of it is done under pressure of time and nervous tension, and to a considerable degree the physical effort which the student must make is accompanied by mental anxiety and definite, often grave, responsibility. Viewed from any standpoint whatever, real nursing is difficult, exacting work, done under abnormal conditions, and all the extraordinary, subtile, intangible rewards and satisfactions which are bound up in it for the worker can not alter that fact.

Ten hours, or even nine hours, of work daily of this nature can not satisfactorily be combined with theoretical instruction to form a workable educational scheme. It is futile, and it should frankly be so conceded, to offer instruction to students who are unable through fatigue to make the required mental effort, who can not, if they would, bring freshness, enthusiasm, or even intelligent interest to the subjects presented. The attention of tired students may be held by an exceptionally able lecturer for brief periods, but sustained work is out of the question. The student under these conditions not only loses the valuable knowledge which should illuminate every step of her work, but is liable through fatigue to misunderstand or misinterpret the instruction designed to afford her a safe basis upon which to build correct practical procedures. The direct effect of this is an immediate loss to the student; the indirect effect is a steady loss of interest in that part of her work which she can not by any possible effort find time and strength to handle satisfactorily. The importance of the practical side of her work is highly emphasized, that of the theory is minimized and belittled. It is not surprising that student nurses in training schools should eventually grow to exalt the practical above everything. It is the logical and inevitable result of the daily lessons taught them of the relative importance of the two factors in their education. Another aspect of these long hours, and one of extreme importance, is their bearing upon the health of student nurses.

Included in the special questionnaire on hours of work were questions on the average number of days of illness per student, the nature and causes of such illnesses. The replies received did not lend themselves readily to ordinary methods of tabulation, but as far as could be gathered the illnesses of students were due to one or more of the following causes: Overcrowded wards, overcrowded and unsanitary nurses' homes, overwork due to shortage of pupils, fatigue, exposure, overheating, poor food, not enough outdoor life, too little play, epidemics—these all figured as being in some measure contributory to the illnesses of students recorded in the various institutions. Of interest was the statement made in one reply that improved accommodations for more nurses brought down the number of pupils off duty on account of illness.

That long hours of ward work are, however, in most hospitals in the last analysis the main factor in causing, directly or indirectly, sooner or later, a heavy percentage of illness, those familiar with hospital life and its demands will not be disposed to doubt, and lowering the age of admission to schools becomes in its relation to prevailing hours of work a matter of the utmost importance. Dr. Frederic Lee, whose studies of fatigue in its relation to health are authoritative, makes the point that the fatigue resulting from long hours is far more serious in its effects upon such younger candidates as are now entering our schools—of such ages, for instance, as 18, 19, and 20—than upon the older student of former years. The shorter day, therefore, is seen to be important from the standpoint of the younger student, as well as from the effects of the longer (three years') course of training.

How largely the superintendents of training schools feel the need of improvement in this direction may be gathered from the fact that over two-thirds of the replies to the questions on this subject suggested shorter hours as advisable or necessary, that a large proportion of these stated their firm belief in an 8-hour day, and that almost every reply which came showed clearly in one way or another the difficulties under which the schools were laboring in trying to carry on the hospital work with the existing number of students. Many replies expressed outright the urgent need of more nurses, and one stated frankly that in order to adhere to a proper system of hours, and not make them dependent on hospital conditions, she would require a 20 per cent increase in the number of students—which she was quite unable to secure.

An interesting reply from a school where, as nearly as could be discovered, the working hours were 11 was to the effect that these hours were very satisfactory, and that the patients disliked a change of nurse even from day to night. Another stated "12 hours are not too many if there is plenty of good, nourishing food."

LENGTH OF ACADEMIC YEAR.

In considering this whole question of time and hours, it must not be forgotten that, as compared with other professional schools or with colleges, the training-school year is unprecedentedly long. It covers, in the majority of schools, 50 weeks each year, in which there are no Christmas, Easter, or Thanksgiving holidays and rarely a whole free Sunday. The annual vacation period is generally two weeks in length and although there are some schools allowing three weeks or even one month, there are others allowing but 10 days of vacation annually. In all schools it is customary to require the student to make up to the hospital every day or half day lost by illness or absence. Contrast the 50 weeks of the training school year with the 32 or 36 weeks of the academic year in the college or professional school. It is the rare instance in which the year in either of these institutions extends to 38 or 40 weeks. In point of actual time, therefore, the course of training in the majority of schools, which covers three years, as the accompanying table shows, is equivalent to four full academic years.

Length of period of training.

Number of years in course—	Number of schools.
4	[1] 1
3½	[2] 1
3	501
2½	82
2	103
No data	4
	692

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[1] The Waltham School, Waltham, Mass

[2] The Presbyterian School, Chicago, Ill.

In connection with so long a course of training, long hours of work take on a new significance. They seem an intolerable offense against the principles for which the hospital and training school are standing in modern society, the principles upon which efforts are based to preserve and protect health and to advance knowledge concerning them.

The late Mrs. Hunter Robb, the first principal of the training school in the Johns Hopkins Hospital, Baltimore, and an authority on nursing education, pointed out in the very beginning the dangers of adopting the three years' (calendar years) course unless with it came shorter hours, and she insisted that superintendents of nurses ought to hold to the two years, and not consider adding to them, unless they were prepared to limit the day's work of practical nursing to eight hours. In an address on this subject written in 1895, and read at a meeting of superintendents of training schools, she said (Transactions of the American Society of Superintendents of Training Schools for Nurses, 1895, p. 36):

> I am sure that many of you have had some qualms of conscience at the way in which we are sometimes forced, I might almost say, to drive our pupil nurses through a two years' course. I assure you that I have had myself many anxious moments for the future of certain of my pupils as regards their health. It is well known that a combination of physical and mental labor is more exhausting than simple manual or simple mental occupation. It is true that for a time such a strain can be borne without producing any permanent injurious effects, and it is possible in most cases for women, to stand the strain imposed upon them for two years, although I am afraid that not all of them come out of the trial unscathed. If, however, this high pressure is to be kept up for three years, I am sure that the health of the nurses will suffer. A woman who works physically over eight hours a day is in no mental condition to profit to any extent by class instruction or lectures. I maintain, therefore, that the three years' course must not be considered at all unless the hours of practical work are shortened, but if the two changes can be made together, then the preservation of the health of the nurse and the extension of her education and training will be insured. This again will result in an increase in her competency and consequently will be productive of greater benefits to the patients who come under her care during her training, and after she has graduated.

Whatever changes may arise in the future in the system of educating nurses, this question of shorter hours certainly is a matter of immediate, paramount importance, and perhaps no one aspect of training-school work has greater influence upon prospective candi dates than this one of the long hospital hours.

NEED OF VITAL STATISTICS.

It is felt by some of those who have been identified for many years with hospitals and training schools, that there is need for carefully secured vital statistics which shall supply exact information, not only as to the relative effect of two against three years of rigid hospital training, or the 8, 9, or 10 hour day, the conditions under which the students live and work, the number of physical and nervous breakdowns during the ordinary course of training, but which shall carry its investigations out into the nurse's professional life and work, in an attempt to discover the length of the working life of the average nurse in various professional fields of activity—private nursing, hospital work, district work, tuberculosis work especially, and other phases of work in which nurses are now engaged in numbers. It is important to have some accurate data as to the amount, for instance, of tuberculosis which develops in nurses after they leave the training schools, and at what period; and now that the idea of requiring a careful physical examination of all students is gaining favor in schools of the highest standing, as a measure of protection both to the student, hospital, and school, it should be comparatively easy to secure such vital statistics.

THE CURRICULUM.

The general plan of work in all training schools has the merit of extreme simplicity. The accepted candidates are admitted at certain periods of the year in numbers in accordance with the needs of the hospital. In some schools it is customary to admit groups of students twice yearly, in the spring and in the autumn; in others they are admitted every three or four months; and still others admit when a vacancy occurs in the school or some special need arises in the hospital. It has been the universal custom to place these students, called "probationers," on duty in the hospital wards immediately on arrival, to confine them for the first few days to the simpler tasks in caring for the surroundings of patients, and to advance them shortly to minor duties in the actual care of patients. A certain proportion of these students thus on probation fail to pass the required tests, and retire or are dropped. The successful ones are placed in uniform, becoming the junior students on the staff, and from this point on they are pushed forward with considerable rapidity into the more difficult and important tasks and into increasing responsibility. It is naturally essential that they should be ready to render efficient service to the hospital at the earliest possible date. Some idea of the the rapidity with which this process of development goes on may be gathered from the fact that it is customary to place this young student on night duty (i. e., the sole charge of a ward of patients) at a comparatively early stage of her training, and it is expected that those who have been training her will have prepared her for this stage of her work, which may come at any time after the fourth month. Formerly it was a common custom to place student nurses on night duty at the end of the third and sometimes even of the second month. There has been great improvement in this matter of recent years, and now many of the better type of schools postpone this trying experience until the sixth month or later.

In thus hastening the practical progress of the student for practical purposes it has been necessary to set her at many tasks without any adequate instruction to prepare her for them. She has been doing certain work long before acquiring knowledge of the fundamental sciences or the principles upon which that work is based. The few hours devoted to theory, usually not more than two a week, have made the rate of progress in that part of her education exceedingly slow, and the fatigue resulting from 9 to 10 hours of work daily have made it difficult for her to profit by the instruction offered.

PRELIMINARY COURSES.

With the view of improving this feature of training-school work and introducing better methods, brief preliminary courses were established in 1903 in two training schools in Great Britain, the schools of the Royal Infirmary at Glasgow and of the London Hospital at London. This attempt to give the student some slight preparation in theory and elementary nursing procedures proved highly satisfactory, and at a little later date the same plan was tried in this country in a somewhat larger way. In the report on this subject published by the Bureau of Education in 1905, statistics were given of 43 training schools in different parts of the country in which these preliminary courses had been established. The development in this direction was recognized as marking an important and interesting advance in training-school work, and the progress made in the brief period following its introduction into a representative school of nursing, in 1901 (the Johns Hopkins Hospital training school, at Baltimore), had been so surprisingly rapid as to afford great encouragement to those who had urged it as an improvement in educational methods.

The course as originally outlined here covered a period of six months, and provided instruction in the fundamental sciences which underlie the art of nursing, such as anatomy and physiology, bacteriology and chemistry, materia medica, hygiene, dietetics (with laboratory work in cookery), housewifery, sterilization and disinfection, and the elementary principles and procedures in nursing. It was realized that a few months spent in preparation of this nature would enable the student to enter the ward and begin the practical care of patients and the study of disease under conditions favorable alike to educational growth and to the safety and welfare of her patients. Instead of being the unskillful performer of successive acts the meaning and purpose of which she was frequently entirely unable to comprehend, the student could approach her practical work prepared in some small degree, at least, to profit immediately by the opportunities afforded, and to avoid the errors, the losses through ignorance and ill-directed effort, and the period of distressing mental confusion through which almost all conscientious student nurses passed when trained under the older system, which placed them at a very early stage of their training at the bedside of the patient, entirely unprepared and unfortified. The general principles underlying this new plan of work are recognized as sound. They are approved by the Education Department of the State of New York, which says:

> Schools of nursing to be registered by the regents must be prepared to provide the following opportunities for their pupils: A preliminary course of instruction and probation of not less than four months, during which term the pupils receive the theoretical and practical instruction necessary before undertaking any actual nursing in the wards. (Education Department Bulletin, Albany, N. Y., July, 1911, p. 6.)

A further impetus toward the development of preliminary work was given by the training-school committee of the American Hospital Association, which in its recent report (the International Hospital Record, Sept. 15, 1909, p. 8) insisted "that a preliminary course of study of not less than three months' duration be given to each class."

Teachers College, Columbia University, New York, has offered for two years opportunity for special work in the preliminary sciences leading to nursing. Some of the subjects studied are anatomy and physiology, bacteriology, chemistry, hygiene, household economics, dietetics, cookery, home nursing and emergencies, care of children, and some work in the history and ethics of nursing and nursing sociology.

This course as outlined takes eight months, students who have carried the work satisfactorily being admitted on advanced standing to an approved training school for nurses. Bellevue, Mount Sinai, Presbyterian, and St. Luke's Hospitals, New York, and the Johns Hopkins Hospital, Baltimore, have agreed to deduct 6 to 9 months from their regular course in recognition of such preparation. Applicants must be high-school graduates, and must of course meet the requirements of the training school as to age, health, and general fitness before being admitted as pupil nurses.

In England the course, usually but six weeks in length, has been established in a good many prominent schools, and it is worthy of note that it has been recently introduced into the oldest regular training school in existence, that established by Florence Nightingale in 1860 at St. Thomas' Hospital, London. From statistics gathered through a special study on this subject made in 1911 by the committee on education of the American Society of Superintendents of Training Schools (see Annual Report of this Society for 1911), it was found that 86 schools have now established such preliminary courses, varying in length as the following table shows:

Length of preparatory course:	Schools.
1 college year	[1] 1
6 months	11
4 months	7
3 months	34
2 months	23
6 weeks or under	10
Total	86

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[1] The University of North Dakota.

Preparatory courses reported in training schools in June, 1911.[1]

	Location.	Hospital.	Number of beds.	Number of pupils.	When established.	Included in 3 years?	Subjects taught.						
							Anatomy and physiology.	Bacteriology.	Chemistry.	Hygiene.	Dietetics and cookery.	Materia medica.	Elementary practical nursing.
	School offering preparatory course of one year.												
1	University, N. Dak...	University of North Dakota.	......	......	1910	Yes.	×	×	×	×	×	×	×
	Schools offering a six months' preparatory course.												
2	Baltimore, Md........	Johns Hopkins....	360	145	1901	Yes.	×	×	....	×	×	×	×
3	Chicago, Ill...........	Presbyterian......	200	110	1903	No.	×	×	×	×	×	×	×
4	Cleveland, Ohio.......	Lakeside..........	269	91	1903	Yes.	×	×	....	×	×	×	×
5	Dallas, Tex...........	Texas Baptist Memorial.	135	45	1910	......	×	×	....	×	×	×	×
6	Detroit, Mich.........	Harper............	220	85	1902	Yes.	×	×	....	×	×	×	×
7	Minneapolis, Minn....	Northwestern.....	75	31	1904	Yes.	....	....	....	....	×	×	×
8	.....do................	University........	52	16	1909	Yes.	×	×	×	×	×	×	×
9	New York, N. Y......	Presbyterian......	233	100	1904	Yes.	×	×	....	....	×	....	....
10	.....do................	St. Luke's	300	106	1902	Yes.	×	×	....	×	×	×	×
11	Philadelphia, Pa......	Polyclinic.........	100	30	1903?	Yes.	×	×	....	×	....	....	×
12	Pittsburgh, Pa........	Allegheny General	316	73	1909	Yes.	×	×	....	×	×	×	×
	Schools offering a four months' preparatory course.												
13	Boston, Mass..........	Children's.........	100	45	1904	Yes.	×	×	×	×	×	×	×
14	Chicago, Ill...........	Mercy.............	250	106	1908	Yes.	×	....	×	....	....	×	×
15	.....do................	St. Luke's........	315	120	1907	Yes.	×	×	....	×	×	×	×
16	Norfolk, Va...........	Norfolk Protestant	140	39	1907	Yes.	×	....	....	×	×	×	×
17	Taunton, Mass........	Taunton..........	20	12	1910	Yes.	×	×	....	×	....	×	×
18	Toronto, Ont..........	Hospital for Sick Children.	150	55	1905	Yes.	×	×	....	×	×	×	×
19	Worcester, Mass.......	Worcester City....	295	100	1905	Yes.	×	×	×	×	×	×	×
	Schools offering a three months' preparatory course.												
20	Bangor, Me...........	Eastern Maine General.	100	35	1909	Yes.	....	....	....	....	....	....	....
21	Boston, Mass..........	Massachusetts General.	310	140	......	Yes.	×	×	....	×	×	×	×
22	.....do................	Massachusetts Homeopathic.	300	100	1906	Yes.	×	×	×	×	....	....	×
23	Bridgeport, Conn.....	Bridgeport........	112	46	......	Yes.	×	×	....	×	....	....	×
24	Charlottesville, Va....	University of Virginia.	110	30	1908	Yes.	×	....	....	×	×	....	×
25	Chicago, Ill...........	Cook County......	1,800	180	1904	Yes.	×	×	....	×	×	×	×
26	.....do................	Michael Reese.....	350	......	......	Yes.	×	×	....	×	×	×	×
27	Cincinnati, Ohio......	Christ.............	120	53	1903	Yes.	....	....	....	....	×	×	×
28	.....do................	Jewish............	125	30	1908	Yes.	×	×	....	×	×	×	×
29	Dayton, Ohio.........	Miami Valley.....	150	45	1906	Yes.	×	×	....	×	×	....	×
30	Detroit, Mich.........	Grace.............	150	65	1908	Yes.	....	×	×	×	×	....	×
31	Fall River, Mass......	Union.............	80	29	1908	Yes.	×	×	....	×	×	×	×
32	Indianapolis..........	Methodist Episcopal.	70	40	1911	Yes.	×	×	....	....	×	×	×
33	Lewiston, Me.........	Central Maine General.	70	33	......	Yes.	....	×	....	×	×	×	×
34	London, Ont..........	Victoria...........	300	84	1906	Yes.	×	×	....	×	....	×	×
35	Muskegon, Mich.......	Hackley...........	40	20	1907	Yes.	×	×	....	×	×	×	×
36	New Haven, Conn....	Connecticut.......	225	70	1905	Yes.	....	×	....	×	×	×	×
37	Newport, R. I........	Newport..........	100	33	1908	Yes.	....	×	....	×	×	....	×
38	Newton, Mass.........	Newton...........	100	65	1907	Yes.	×	....	....	....	×	....	×

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[1] Ten additional schools report a short course of six weeks or under of preparatory work.

Preparatory courses reported in training schools in June, 1911.

Hours of theory, daily.	Practical work, hours daily.	Practical work, where done.								Tuition charged.	Uniforms supplied by—	Textbooks supplied by—	Additional assistants or instructors required.	Affiliation with college or technical school.	
		Demonstration room.	Wards.	Dispensary or clinic.	Diet kitchen.	Pharmacy.	Supply room.	Linen and sewing room.	Laundry.						
5	0	....	....	....	....	....	....	....	....	$25	....	....	Yes.	No.	1
2	6	....	....	....	×	×	×	....	....	50	Stu.	Hosp.	2	No.	2
1–4	6	....	....	×	×	×	×	....	....	25	Stu.	Stu.	1	Rush Medical College.	3
2	7	....	×	....	×	....	×	....	....	25	Hosp.	Hosp.	1	No.	4
1½	10	....	×	....	×	....	×	....	....	0	Hosp.	Hosp.	......	Baylor Medical College.	5
2	6	....	×	....	×	....	×	....	....	0	Stu.	Stu.	1	No.	6
2½	6½	....	×	....	×	....	×	....	....	0	Stu.	Stu.	1	No.	7
5 [2] 2	...... [2] 6	....	×	....	....	....	....	×	×	25	Hosp.	....	......	University of Minnesota.	8
6½	2	....	×	....	×	....	×	....	....	0	Hosp.	Hosp.	2½	No.	9
3	5	....	×	....	×	....	....	....	....	0	Stu.	Hosp.	1	Teachers College.	10
3	5	....	×	....	....	....	×	....	....	0	Stu.	Hosp.	1	No.	11
1½	6	....	×	....	×	....	×	....	....	0	Stu.	Stu.	1	No.	12
8–9	0	....	....	....	....	....	....	....	....	200	Stu.	Stu.	......	Simmons College.	13
2–3	6	×	×	....	×	....	×	....	....	0	Stu.	Stu.	1	Northwestern University.	14
2	5½	....	×	([3])	....	....	....	....	....	0	Hosp.	Hosp.	2	No.	15
......	......	....	×	....	....	....	....	....	....	0	....	....	1	No.	16
2	5	....	×	....	....	....	×	....	....	0	Hosp.	Hosp.	No.	No.	17
4	4	....	×	....	×	×	×	....	....	0	Stu.	Hosp.	2	No.	18
2	7	....	×	....	×	....	....	....	....	0	Hosp. in part.	....	1	No.	19
1–2	10	....	×	([3])	....	....	....	....	....	0	Stu.	Stu.	Yes.	No.	20
1–2	4–5	....	×	....	×	....	....	....	....	0	Stu.	Stu.	No.	No.	21
2	7	....	×	....	....	....	....	....	....	......	Stu.	Stu.	3	No.	22
1	10	....	×	....	....	....	×	....	....	0	Stu.	Stu.	4	No.	23
1	6	....	×	....	×	....	×	....	....	0	Stu.	Hosp.	1	No.	24
......	......	....	×	....	×	....	....	....	....	0	Hosp.	Stu.	2	No.	25
2	8	....	×	....	×	....	×	×	....	0	Stu.	Stu.	Yes.	No.	26
2	8	....	×	....	×	×	×	....	....	0	Stu.	Stu.	2	No.	27
5	5	....	No.	....	×	×	×	....	....	0	Hosp.	Hosp.	3	No.	28
4	5	....	×	....	....	....	....	....	....	0	Stu.	Stu.	1	No.	29
1	8	....	×	....	×	×	×	....	....	0	Hosp.	Hosp.	No.	No.	30
1½	7	×	×	....	×	....	....	....	....	0	Stu.	Stu.	No.	No.	31
2	10	....	×	....	×	....	....	....	....	0	Stu.	....	1	No.	32
1	8	....	×	....	....	....	....	....	....	0	Stu.	Stu.	No.	No.	33
1½	7	....	×	×	....	×	×	....	....	0	Stu.	Stu.	1	No.	34
......	......	....	×	....	×	....	....	....	....	0	Hosp.	Hosp. 1st yr.	1	Hackley Manual Training School.	35
1	1	....	×	....	....	....	....	....	....	0	Hosp.	Stu.	1	No.	36
2½	8	....	×	....	×	....	×	....	....	0	Stu.	Stu.	......	No.	37
[4] ¾	7	....	×	....	....	....	×	....	....	0	Stu.	Stu.	......	No.	38

[2] In Homeopathic Hospital.
[3] In different departments.
[4] Approximately.

Preparatory courses reported in training schools in June, 1911—Continued.

	Location.	Hospital.	Number of beds.	Number of pupils.	When established.	Included in 3 years?	Subjects taught.						
							Anatomy and physiology.	Bacteriology.	Chemistry.	Hygiene.	Dietetics and cookery.	Materia medica.	Elementary practical nursing.
	Schools offering a three months' preparatory course—Continued.												
39	New York	Mount Sinai	500	170	1906	Yes.	×	×	....	×	×	×	×
40	.....do	New York Infirmary for Women and Children.	119	23	1906[1]	Yes.	....	×	....	....	....	....	×
41	Pittsburgh, Pa.	South Side	135	30	1905	Yes.	×	×	....	×	....	×	×
42	Providence, R. I.	Rhode Island	400	160	1906	Yes.	×	×	....	×	×	×	×
43	Pueblo, Colo	Minnequa	150	25	......	Yes.	....	....	....	....	....	×	×
44	New York, N. Y	Bellevue	1,223	111	1910	Yes.	×	×	....	×	×	....	×
45	Quebec, Quebec	Jeffory Hale's	50	27	1909	Yes.	×	×	....	×	×	....	×
46	Rochester, N. Y	Rochester General.	110	56	1906	Yes.	....	×	....	....	....	×	×
47	St. Louis, Mo	Washington University.	200	45	1910	Yes.	×	×	....	×	×	×	×
48	St. Paul, Minn	St. Luke's	100	44	1910	Yes.	×	×	....	×	×	×	×
49	San Francisco, Cal	Lane	175	70	1905	Yes.	×	....	....	×	×	×	×
50	Topeka, Kans	Christ's	85	35	1908	Yes.	×	×	×	×	....	×	×
51	Toronto, Ont.	Toronto General	400	115	1911	Yes.	×	×	....	×	....	×	×
52	Wauwatosa, Wis.	Milwaukee County	250	30	1911	No.	×	×	....	×	....	....	×
53	Westfield, Mass	Noble	55	13	1911	Yes.	×	×	....	×	×	....	×
	Schools offering a two months' preparatory course.												
54	Akron, Ohio	City	80	25	1908	Yes.	×	×	×	×	×	×	×
55	Ann Arbor, Mich	University	300	70	1911	Yes.	×	....	....	....	....	....	×
56	Brooklyn, N. Y	Brooklyn	196	44	1906	Yes.	....	×	×	×	....	×	×
57	.....do	St. Mary's	250	60	1906	Yes.	×	....	....	×	×	×	×
58	Buffalo, N. Y	Buffalo Homeopathic.	40	18	1910	Yes.	×	×	....	×	×	×	×
59	.....do	Erie County	450	47	1906	Yes.	....	....	....	....	×	....	×
60	Camden, N. J	Cooper	100	35	1911	Yes.	....	×	....	×	....	×	×
61	Canandaigua, N. Y.	F. F. Thompson	50	15	......	......	×	×	....	×	×	×	×
62	Chicago, Ill	Augustana	200	88	1906	(2)	....	....	....	....	....	....	×
63	Jamaica Plains, Mass	Adams Nervine	50	19	1905	Yes.	×	....	....	×	×	....	×
64	Kingston	Kingston General.	100	36	......	Yes.	×	....	....	×	....	....	×
65	Louisville, Ky	John N. Norton Memorial.	100	36	1908	Yes.	....	....	....	×	×	....	×
66	Minneapolis, Minn	Asbury and Rebecca Methodist Episcopal Hospital and Home.	105	42	......	Yes.	×	....	....	×	×	....	×
67	.....do	City	250	46	......	Yes.	×	....	....	....	....	....	×
68	New York, N. Y	City and Maternity and Gouverneur.	900	100	1902	No.	×	....	....	×	×	×	×
69	.....do	New York	225	94	1904	No.	×	....	....	....	×	....	×
70	Omaha, Nebr	Nebraska Methodist Episcopal.	100	45	1909	Yes.	×	×	....	×	....	×	×
71	Poughkeepsie, N. Y	Vassar Bros'	65	22	1910	Yes.	×	×	....	×	....	×	×
72	Philadelphia, Pa	Jewish	150	55	1909	Yes.	....	....	....	....	....	×	×
73	.....do	Pennsylvania	315	72	......	Yes.	....	×	....	×	....	....	×
74	Quincy, Ill	Blessing	30	20	1905	Yes.	....	....	....	×	....	×	×
75	Saginaw, Mich	Saginaw General	50	20	......	Yes.	×	....	....	×	×	×	×
76	Springfield, Mass	Springfield	100	43	1909	Yes.	....	×	....	×	×	....	×

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[1] Approximately.

Preparatory courses reported in training schools in June, 1911—Continued.

Hours of theory, daily.	Practical work, hours daily.	Practical work, where done.								Tuition charged.	Uniforms supplied by—	Textbooks supplied by—	Additional assistants or instructors required.	Affiliation with college or technical school.	
		Demonstration room.	Wards.	Dispensary or clinic.	Diet kitchen.	Pharmacy.	Supply room.	Linen and sewing room.	Laundry.						
1	7	....	....	....	×	×	×	....	....	0	....	....	1	No....................	39
½	8½	×	×	....	×	....	....	....	....	0	Stu.	Stu.	1	No....................	40
1	9	....	×	....	....	....	....	....	....	0	Stu.	Stu.	1	No....................	41
2	8	....	×	....	×	....	....	....	....	0	Stu.	Stu.	1	No....................	42
1	8	....	×	....	....	....	....	....	....	0	Stu.	Hosp.	No.	No....................	43
4	6	....	×	....	×	....	....	....	....	0	Stu.	Stu.	5	....	44
1	1	....	×	....	....	....	....	....	....	0	Stu.	Stu.	No.	No....................	45
3	5	×	×	....	....	....	×	....	....	0	Stu.	Stu.	1½	No....................	46
2	8	....	×	....	×	×	....	....	....	0	Hosp.	Hosp.	1	No....................	47
1	8	....	×	....	×	....	×	....	....	0	Stu.	Hosp.	No.	No....................	48
1	8	....	×	....	×	....	×	....	....	0	Stu.	Stu.	2	Cooper Medical College.	49
3	6	....	×	....	×	....	×	....	....	0	Hosp.	Partly Hosp.	1	No....................	50
3	5½	....	×	....	×	....	×	....	....	0	Hosp.	Hosp.	1	No....................	51
1	2	....	×	....	×	....	×	....	....	0	Stu.	Stu.	1	No....................	52
2	3	....	....	....	×	×	×	....	....	0	Stu.	Stu.	No.	State Normal........	53
2	6	....	×	....	×	....	×	....	....	0	Stu.	Stu.	1	No....................	54
3	10	....	×	....	×	....	×	....	....	0	Stu.	Stu.	......	University of Michigan.	55
[1] ⅔	[1] 1⅓	....	×	....	....	....	....	....	....	0	Stu.	Stu.	1	No....................	56
1	6	....	×	....	....	....	....	....	....	0	Hosp.	Hosp.	2	No....................	57
3	4	....	×	....	....	....	×	....	....	0	Hosp.	Hosp.	No.	No....................	58
2	6	×	×	....	×	....	....	....	....	0	Stu.	Stu.	2	No....................	59
2	8	....	×	....	....	....	....	....	....	0	Stu.	Stu.	1	No....................	60
3½	4⅘	....	×	....	×	....	×	....	....	0	Stu.	Stu.	1	No....................	61
2	4	....	×	....	....	....	×	....	....	0	Stu.	Stu.	No.	No....................	62
1	10	....	×	....	....	....	....	....	....	0	Stu.	Stu.	No.	No....................	63
1	9	....	×	....	....	....	....	....	....	0	Stu.	Stu.	1	No....................	64
3	5	....	×	....	×	....	....	....	....	0	Stu.	Hosp.	1	No....................	65
1	8	....	×	....	×	....	....	×	....	0	Stu.	Stu.	1	No....................	66
2	8	....	×	....	....	....	....	....	....	0	Stu.	Stu.	No.	Yes....................	67
[1] 2½	2½	....	×	....	....	....	....	....	....	0	Stu.	Hosp.	No.	No....................	68
1	7	....	×	....	....	....	....	....	....	0	Stu.	Stu.	1	No....................	69
1	6	....	×	....	×	....	....	....	....	0	Hosp.	Hosp.	1	No....................	70
1	8	....	×	....	×	....	×	....	....	0	Stu.	Stu.	No.	No....................	71
1	7	....	×	....	×	....	×	....	....	0	Stu.	Stu.	No.	No....................	72
1	2	×	×	....	....	....	×	....	....	0	Stu.	Stu.	No.	No....................	73
1	7	....	×	....	....	....	....	....	....	0	Stu.	Stu.	No.	No....................	74
......	12	....	×	....	....	....	....	....	....	0	Hosp.	Stu.	2	No....................	75
2	7	....	×	....	....	....	×	....	....	0	Stu.	Stu.	No.	No....................	76

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[1] One month additional.

TIME GIVEN TO SUBJECTS OF STUDY.

In nine schools the preparatory course was established during the last year. The idea for which it stands finds ready acceptance in the minds of both training school and hospital workers, and to the laity it seems an essential measure for safeguarding the patient. In actual operation, however, practical difficulties appear. Increased accommodation for students is required; special instruction and supervision are essential features of the plan. Beyond this, when the demands of the hospital press, as they will, and the services of even the unskilled probationer are of value, it is well-nigh impossible to maintain any scheme of instruction uninfluenced by hospital requirements. Such conditions have operated to reduce the preliminary course from the six months of the original plan to the three months which is now the usual preliminary period, and to further impair its purpose by placing the student at the very beginning of the course in the hospital wards for several hours daily. A very small number out of the 86 schools offering preliminary courses are able, apparently, to keep their students out of the hospital service for the entire or even a major part of the brief course, and the hours of ward work are now in instances so long as to leave hardly any time for that study of the sciences and other fundamental subjects for which the preparatory course was established. With the concentration into a few months of the theory which was originally scattered through at least the entire first year, the student is of necessity required to give several hours daily to study. If this need is not recognized, and the student is called upon for eight or even seven hours of practical work daily in wards or anywhere else, she is in a worse plight than under the old system.

To derive full benefit from this all too brief opportunity for preparation, the student should of course, be permitted to give her entire time and energy to it, but where at present this is not feasible the maximum amount of hospital work required of her daily should not exceed four hours. It appears from the statistics that about 40 per cent of the 86 schools require during the preliminary course seven or more hours of hospital work daily. The introduction of these preliminary courses has formed the first steps in bringing about a proper grading of the various subjects in the curriculum. It has brought into proper place and orderly relationship such fundamental subjects as anatomy, physiology, bacteriology, hygiene, dietetics, materia medica, which formerly were scattered in a haphazard way throughout the entire course. These subjects now form an important part of the curriculum in almost all schools, and it is evident from a study of nearly 500 reports that a considerable degree of uniformity in subjects has been reached. There is, however, a striking lack of uniformity in the length of time devoted in the different schools to these subjects. According to the records, the time allotted to the various subjects of the first year range about as follows:

Subject.	Number of hours.
Anatomy	8-72
Physiology	6-60
Bacteriology	2-40
Hygiene	2-24
Dietetics	5-40
Materia medica	10-60

In respect to all these subjects several instances were found in which the number of hours either fell below or exceeded those here recorded, but the record may be accepted as indicating the general situation and showing clearly the wide divergence of views held in training schools as to the ground which should be covered in these fundamental and essential subjects.

In anatomy and in physiology from 20 to 24 hours seems to be the usual time required in the larger number of schools, but it is noted that 40, 50, and even 60 hours are not uncommon.

In bacteriology, the majority of schools do not require more than 10 hours of work, many of these actually stating the requirement to be from 2 to 5 hours. In view of the extreme importance of this subject in the education of the nurse, as one of the very pillars upon which much of her training must rest, that school must come under criticism which fails to provide adequate work in this subject. Students of domestic science are usually required to cover one full half-year in bacteriology, chiefly of laboratory work in which the time occupied is usually not less than 60 hours. Prof. Moore, of Cornell University, believes that bacteriology plays such an "important part in the immediate physical well-being of every individual" that it should be "introduced into the common schools." (Bacteriology in General Education, Science, February 24, 1911, p. 280.)

It is noticeable in the reports how much more time is allotted in many schools to materia medica than to dietetics. This may perhaps be due to a lack of appreciation of the true relative importance of the two subjects, or to the fact that instruction in materia medica can usually be rather easily obtained without additional expense from some member of the staff, whereas instruction in dietetics calls for a specially trained teacher, who must be paid for her work. Far too little attention is given this important subject in training schools; the courses offered are brief; the work is elementary in character. There should be more work in food properties and values, in nutrition, and food preparation.

The nurse is required to be something of an expert in this province, to be able to work out satisfactory dietaries on certain general lines laid down by the physician, not only during illness, but in convalescence, during infancy and childhood, and in those special conditions where the diet is the treatment. She should be able also to plan nourishing dietaries and advise as to healthful food in families where sickness is combined with poverty and economic difficulties must be surmounted.

But this more thorough work in foods should be preceded by at least an elementary course in chemistry, and this is equally needed as a basis for any satisfactory work in hygiene and sanitation or in materia medica. In some of the training schools connected with universities, it is noted that courses in chemistry are given, but these are few in number.

In all the subjects which have just been discussed, it is important that more uniformity in standards should be reached, and steady work in this direction is urgently needed.

In arrangement and grading of subjects, a somewhat curious situation appears—the first year includes, apparently, a considerably larger amount of instruction than either of the other two years. Theoretical work appears to diminish appreciably with each year, and there are schools (32 were found in the reports) in which apparently no instruction whatever is offered in the third year. Instead, therefore, of a course so arranged that the student progresses from year to year in theoretical knowledge as well as in practical experience, there is offered a course which, so far as intellectual effort is concerned, decreases instead of increases in its demands upon the student. This naturally might lead one to ask why a third year is necessary and gives color to the suggestion frequently made, that the third year is established more for the benefit of the hospital than for the student.

INSTRUCTORS.

In 315 schools (nearly half the entire number from which reports were received) there are no paid instructors. On this subject, for the remaining schools, it is difficult to present any accurate and serviceable information, since the returns show such a misconception of the data asked for as to render the results unsuitable for use. In the majority of instances the officers of instruction and supervision were evidently identical, and frequently this was stated to be the case. The salaried instructor is a new feature in a training-school work, and apart from teachers of dietetics and massage there are very few schools, probably not more than 10 in the whole country, which have any one officer whose time is devoted wholly to teaching. The conclusions reached from the reports on this subject were that teaching in training schools is now conducted almost entirely by administrative and executive officers, such as the superintendent or assistant superintendent of nursing, with the cooperation of the visiting staff of physicians and surgeons. In the latter instance the teaching is largely through short lecture courses for which the lecturer receives no payment.

LIBRARIES.

In 299 schools out of the 692 reporting, no evidence was found of anything in the nature of a library. The reports said "no books" or "no data," or ignored the question. In the remaining schools, reports showed 92 in which the number of books did not exceed 25, and it was found not to exceed 100 in over two-thirds of the entire number reporting. In some instances libraries were reported containing from 100 books up to 1,000, and in two or three instances beyond that number. In the latter case it seemed probable that the library usually was that of the hospital, the medical school, or of the physician in charge, and thus more or less available to the student nurse, rather than a library selected with special reference to the needs of the training school and freely and easily accessible to the students at all times.

TUITION FEES FOR PRELIMINARY INSTRUCTION.

In this country tuition fees are charged in six schools, the very small sum of $25 forming the usual fee. These schools are in all but one instance those offering a full six months' course. They are—

Johns Hopkins Training School, Baltimore, Md	$50
Presbyterian Training School, Chicago, Ill	25
Lakeside Training School, Cleveland, Ohio	25
University of Minnesota, Minneapolis, Minn	25
University of North Dakota, Fargo, N. Dak	25

In the school connected with the Children's Hospital, Boston, a fee of $200 is charged, which covers not only the preliminary instruction but that given during the entire course. This is a small but admirably managed and highly progressive school, which has by its various affiliations secured exceptional opportunities and advantages for its students, for which they willingly pay.

In this school the preliminary course is given largely in Simmons College, where the students receive all of their scientific preparation. There is a slight but distinct tendency on the part of training schools to seek some such relationship as this, and several have turned to colleges or technical schools for that scientific groundwork which the training school without endowment, trained teachers, laboratories, or equipment can not give in any satisfactory way.

In the Waltham Training School, Waltham, Mass., tuition fees amounting to $250 are charged for the first two years of the course. This school offers an excellent preparatory course, but limited opportunities for hospital training and practice. The larger part of the students' training is obtained in the private practice of physicians, payment for their services going to the support of the school.

RELATIONS TO COLLEGES.

Some of the training schools which have succeeded in establishing such a relationship in a greater or less degree are those connected with the hospitals here named, the institutions with which they are related being given also:

Children's Hospital, Boston, Mass., with Simmons College.

The Presbyterian Hospital, Chicago, Ill., with Rush Medical College.

The Mercy Hospital, Chicago, Ill., with Northwestern University Medical School.

Wesley Hospital, Chicago, Ill., with Northwestern University Medical School.

Evanston Hospital, Chicago, Ill., with Northwestern University Medical School.

Provident Hospital, Chicago, Ill., with Northwestern University Medical School.

Lane Hospital, San Francisco, Cal., with Cooper Medical College, Leland Stanford.

Iowa Methodist Hospital, Des Moines, Iowa, with Drake Medical College, Drake University.

Madison General Hospital, Madison, Wis., with University of Wisconsin (for some class and laboratory work).

An interesting experiment was made last year in the University of North Dakota, where a course was organized, designed to give instruction in the academic and technical subjects which precede the practical work in hospital training. The work as arranged covered one academic year and provided instruction in the usual subjects of anatomy, physiology, bacteriology, chemistry, hygiene and sanitation, dietetics, materia medica, and principles of nursing, and in addition suitable courses in psychology and sociology were offered. Arrangements were made with several adjacent hospitals to receive the students who satisfactorily completed this course. Three students entered last year, and as the movement is in the right direction, it should eventually attract a desirable grade of students and contribute materially to the improvement of nursing education. There does not appear to be here, however, any organic relation between the university and the hospitals which are said to be affiliated which would give the university control over the whole education of the nurse. Such relation would insure an adequate completion of the work begun, a proper grade and degree of instruction in actual nursing subjects, reasonable hours of practical work, etc.

TRAINING SCHOOLS FOR NURSES IN UNIVERSITIES.

Perhaps the most promising effort now being made anywhere to establish nursing on a satisfactory educational basis is that which has recently been inaugurated at the University of Minnesota, in its new school of nursing. Dr. Richard Olding Beard, professor of physiology in the university, says of it:

> The university education of the nurse and the university control of the training school for nurses, as a department of instruction, is an accomplished fact. The training school for nurses of the University of Minnesota, as well as the university hospital,

> is in the direct charge of the faculty of the College of Medicine and Surgery. Its preliminary courses of instruction and its undergraduate lectures are given in the laboratories and lecture rooms of that college. Its examinations are conducted by the chiefs of the college departments. Its diplomas are conferred by the board of regents of the university, upon recommendation of the faculty.
>
> Its integrity as a teaching department is assured not only by its university control but by the fact that the university hospital exists in itself as a purely teaching institution. It is the clinical laboratory of the college. It is devoted to the education of medical students and the training of nurses. So conceived and so maintained as a teaching hospital, it must of necessity realize the highest ideals of a hospital service. Its existence is justified by the attainment of nothing less. Entertaining as it does free patients from all parts of the State, selected for the clinical contribution they offer, and selected moreover from among those who are unable to pay for care and treatment, the realization of these ideals is unembarrassed by any secondary considerations. The best results to the patient and the highest values to the student in the practice and teaching of scientific medicine are its only and its lofty aims.
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> The unification of medical teaching in the State of Minnesota under the immediate control of the State university guarantees the future growth and the high quality of its service. The training school will be developed as a special department of this single university school of medicine. ("The university education of the nurse." Teachers College Record.)

A somewhat similar situation in plan exists in the school of nursing of the University of Texas, which in 1897 was by action of the regents of the university created as—

> one of the regular schools of the medical department of the university, and the pupil nurses are recognized as students of this branch of the medical department. The regents of the university are responsible for the instruction of the student nurses in all branches and have placed the management of the curriculum in the hands of a committee composed of the clinical instructor of nursing, the dean, and two members elected annually from the faculty of medicine by the members of the faculty. The committee has arranged a curriculum and appointed from the members of the faculty and corps of lecturers and demonstrators the special instructors in each branch. (Bulletin of the University of Texas, Mar., 1910, p. 96.)

The clinical instructor of nursing referred to above is the superintendent of nurses, who is a member of the faculty. A different and less close relationship with the university is held by those schools of nursing forming an integral part of university and other hospitals connected with the following institutions: University of Michigan, Ann Arbor, Mich.; George Washington University, Washington, D. C.; University of Virginia, Charlottesville, Va.; University of Colorado, Boulder, Colo.; Washington University, St. Louis, Mo.; University of Missouri, Columbia, Mo.

The advantages to training schools resulting from such connections with universities are emphasized in letters recently received by the writer from the heads of several such schools. They may be summarized about as follows:

(*a*) Lecture rooms, laboratories, libraries, and teaching material are usually freely available to student nurses.

(*b*) Instruction is given to student nurses by professors and instructors in medical schools, those who are accustomed to teaching and to providing systematic, thorough instruction.

(*c*) Respect is shown for the theoretical side of their work, and student nurses are obliged to give the same attention to their studies that the other students give.

(*d*) The foregoing conditions naturally operate to attract a higher grade of candidate for admission.

The letters dwell also on the value of less tangible matters, such as the facts that the nurses are entered as students in the university, graduate with the other students, receive their diplomas from the hands of the president, and catch something of the university spirit. An interesting opportunity exists here for strengthening and developing training schools and improving the education of nurses which should be fully utilized. All of the resources of the university, and not alone those of the medical department, should be freely available to student nurses, since nursing draws from many sources beyond the strictly medical and sanitary for its perfection. Valuable, however, as are these connections with university, college, or technical school, they will not alone solve the problem of education in nursing. If the connection is through the hospital of which the training school is a part, there may be certain opportunities available, certain privileges granted to the student nurses, but there is no certainty that the university hospital will differ materially from other hospitals in its relation to the training schools. There are several schools belonging to university hospitals reaping no obvious benefit from such relationship.

If, on the other hand, the training school is a department of the medical school, there may be some further advantages secured to it, but there is no guarantee that the medical school will be willing to incur any appreciable expense for the training school or accord it any real freedom for growth. This relationship is very interestingly discussed by Dr. Alfred Worcester, of Waltham. He says:

> Of course it would be a step forward from the present hospital domination of the training school if the education of nurses were assumed by the medical schools which have whole control of their hospitals. But such a step would at best be only a half-way step and would entail great difficulties. It is true that the nursing profession is secondary to the medical profession in that the nurse is the doctor's executive officer. In the same way the engineer of the battleship is secondary to the captain. But from that it does not follow that the education of naval engineers should be intrusted to officers of the line. Engineers must be educated by engineers, surgeons by surgeons, and nurses by nurses—each profession in its own school, under its own separate faculty, and controlled only by the university. ("The education of nurses." The University Record, Chicago University, May, 1903, p. 1.)

It is the opinion of some of those who have for many years been engaged in hospital and training school work, who have given careful study to the peculiar relationship which has been established between them, and have met in every form the difficulties due to that relationship, that the first step toward developing proper schools of nursing lies in separating them from the hospital and its control and placing them upon an independent basis. Under the present system the school has no life of its own. It is in essence simply a part of the hospital service, and it is unquestionably governed in all its important functions, not by a body concerned with their fulfillment, but by everyday hospital conditions and necessities. That a number of important hospitals are interested in their schools and kindly disposed toward their students does not greatly affect the situation. It does not insure the maintenance of any stable educational policy; it does not prevent sweeping changes in the school as the result of a change in the administrative staff of the hospital, and members of that staff who may be hostile to the education of nurses will have power to do such destructive work in the training school as may set it back for years, upon so insecure a foundation does it now stand. Mrs. Hunter Robb, writing on this subject, said:

> Hospital authorities and superintendents of training schools have done to the best of their ability, and have utilized approximately to the limit the possibilities of the system under which they have had to work. The main limit is based upon the fundamental fact that from the educational standpoint the relation of the training school to the hospital work has always come first and the nurses' education has been relegated to a secondary position. In no instance has a training school for nurses been founded primarily as an educational institution; it has always been regarded as an appendage to a hospital. But until this is changed and schools for nurses are founded for the primary purpose of educating women in nursing, the hospital being utilized as the ground for gaining practical experience, we can scarcely hope for any uniformity in nursing or for the higher grade of work for the hospital or the sick. ("Affiliation of training schools for educational purposes," Mrs. Hunter Robb. Report American Federation of Nurses, 1905, p. 159.)

In an interesting and suggestive paper on the education of nurses, Dr. F. P. Denny, of Brookline, Mass., advances the same idea, pointing out the need for an educational institution which would assume the whole responsibility of the training of nurses. After showing the improvements which such schools might bring about, he says "these reforms are sure to come if the training is wholly in the control of an institution whose only object is to secure the best possible education for the nurse." ("The need of an institution for the education of nurses independent of the hospitals," by Francis P. Denny, M. D. Boston Medical and Surgical Journal, June 18, 1903, p. 658.)

An English writer (a physician), discussing this subject not long since, advocated the incorporation in England of a Royal College of Nursing, which would grant degrees in nursing just as they are granted in medicine. After briefly outlining a plan for such an organization he says: "The degrees might rightly follow the lines of the patron profession, and a diplomaed nurse might be entitled to the degree of B. N." (bachelor of nursing). A higher diploma, he thinks, should be encouraged for those who aspired to administrative or teaching posts. "Only those," he says, "who held a recognized degree would be recognized as nurses, and the line of demarcation would be sharp and clear." ("The nurse of the future," Josiah Oldfield. Westminster Review, Dec., 1905, p. 661.)

But a college for nurses is not a new idea. It was included in the plans of that committee of the State Charities Aid Association which in 1874 was instrumental in establishing a training school in connection with Bellevue Hospital, New York. "As the work advances," their report reads, "we hope to establish a college for the education of nurses which will receive a charter from the State and become a recognized institution of the country."

The founders of Bellevue Training School were in a position to plan for future educational growth and development because this school, though closely connected with the hospital, was not controlled by it, but under the management of a separate board maintained largely or wholly by separate funds. The board entered into an agreement with the hospital to provide the students opportunities for definite training and experience in return for such services as they could render the sick. In the hospital they were subordinate to the organization and its system, but under the control of the school board in matters of teaching, training, and discipline.

The earlier schools, both in England and America, were established on this basis, and the very first school founded by Florence Nightingale, in 1860 in connection with St. Thomas Hospital in London, was and still is managed by a separate board, under its own endowment, and represents a distinct educational institution. The Illinois Training School, of Chicago, is a separate institution for the education of nurses, and has a large and strong board of directors. It is connected with a great municipal hospital—the Cook County Hospital—and a contract is made annually by the school to carry on the nursing in the hospital. But in the last analysis this school is really maintained by the student nurses, for whose services the hospital pays the directors of the school a stated sum per capita per day.

With one or two exceptions, however, the schools in this country have not been able to maintain a separate status, and they have one by one eventually become incorporated into the hospital. No careful study has been made of the causes of this transition, but it is probably safe to hazard a guess that the lack of sufficient endowment and the difficulty of securing funds to maintain the school were largely instrumental in bringing about the change. And hospitals were eager to secure control of the schools. The crux of the whole situation seems to lie here—education when worth anything is costly, and no scheme of education that will fitly prepare women for the extraordinarily varied demands in nursing can be carried on without expense. The hospital knows this, but can not meet it. Society has so far not recognized it; while requiring much of the nurse in private, and of late in municipal life, it has left the entire task of educating nurses to the hospital, unmindful of the fact that the hospital is not founded for such work primarily and that it can not incorporate into its own great scheme of activities another scheme equally great but entirely different in purpose and requiring special conditions and a special government.

While hospital and training school are fundamentally interdependent, there is no more reason why the hospital should own and control the training school than the medical school. The basis of relationship should be one of close and efficient cooperation.

Dr. Henry M. Hurd, until recently superintendent of the Johns Hopkins Hospital, Baltimore, in a valuable paper on this subject says:

> It is well known that no first-class school of any sort, and no form of higher education can be a profitable business enterprise; that the teaching of theology, of law, medicine, and pedagogics, or instruction in the strictly technical schools can not rest upon a commercial basis and pay its proper expenses. It should ever be borne in mind that nursing the sick is now a calling as much as law, medicine, or theology; that it enters into the life of the community to a greater extent even than these professions, and that the families of the rich equally with the poor are concerned in the proper education and training of nurses.
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> Medical schools must have an ample endowment to place medical education upon a proper footing and do good educational work. It is equally true that a similar endowment is necessary for the training schools for nurses. The duty is apparent; to the nurse is committed the personal care of the sick in every community; she comes into the family; she bears the responsibility and care of the family in the absence of the family physician; she represents him, replaces him, assists him, and supplements his labors by her efficiency and helpfulness. Through her efforts his labors to cure his patients are made effective. If she is imperfectly trained and unable to appreciate the higher range of her duties, she becomes a broken reed, upon which he can not lean with safety.
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> Then, too, in the more public duties of the nurse an adequate training is equally essential. In every city, large or small, nay, in every village or town, the hospital, with its properly arranged, well-equipped operating room, efficiently supervised by a trained nurse, has become essential, so that an accident case, or one requiring sudden surgical intervention, can be cared for as speedily and as well at the home of the patient, wherever that may be, as in the largest city clinic or the most expensive hospital in the land. The competent and thoroughly trained nurse is an all-important adjunct of every such hospital.
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> The nurse has also been introduced into the public school with great advantage to the public welfare. She watches over the health of the pupils; she observes the hygienic conditions of the school; she visits the home to know how the pupils live there and to give such instruction as will improve the conditions of living. In district nursing her services also require the highest grade of intelligence and training. She must become, to use Florence Nightingale's term, "a missioner of health" to families of the poor, and must preach the gospel of hygienic living and healthful surroundings.

Upon the tuberculosis nurse is placed the hardest part of the battle which is being waged against tuberculosis in every part of the country. She not only must look after the sick as a nurse, but also is responsible for the hygienic care of the sick and the instruction of the family, so that tuberculosis may not be a source of danger to the community. She must equally instruct the family and supervise the home, so that other members of the family may not, through inadvertence or ignorance, acquire the dread disease. She must see that families live healthily; that too many are not crowded into an infected room; that rooms are properly disinfected after the death or removal of a tubercular patient, and must protect the whole community from the spread of tuberculous disease.

Everywhere her presence makes for comfort in sickness, for the minimization of the loss to the community and the state which disease, suffering, and death entail, for the prevention of disease, and for the social uplift which is the hope of the nation with its conglomerate population and racial diversities and animosities. More surely than education alone, more strongly than the ties of religion, more firmly than self-interest and commercialism, this form of service will bind society together and assist each class in the effort to lighten the burdens of the other.

When such important duties devolve upon the trained nurse it is short-sighted in the extreme and contrary to good policy to leave the establishment and maintenance of training schools to private initiative, where too often the governing motive must be to get public or private hospitals supplied with nurses at the lowest cost to the institution.

Is it not the duty of the public, rather for its own welfare, to see that nurses' training schools are adequately endowed, so that young women of character and ability can be induced to come to them, and so that when they come to such training schools they may be properly instructed for the discharge of duties which take hold of the health and welfare of the entire community?

("Shall training schools for nursing be endowed?" Dr. Henry M. Hurd. The American Journal of Nursing, Sept., 1906, pp. 849–952.)

Whether the freedom of the training school is brought about by means of endowments or by State or municipal aid does not matter. The thing to be secured is a separate government for the training school. The actual relation of the school to the hospital need not greatly change in certain ways, and student nurses on duty would always be subject to the administrative régime. The school buildings should remain beside the hospital. But the endowment should provide such extensions and additions to those buildings as will make them schools in the accepted sense of that word—lecture rooms, laboratories, teaching material—every equipment needed for the required academic and scientific work should be supplied, and nothing should stand in the way of the student in securing proper foundations of this nature for her later work in the hospital. She should, however, pay for her tuition and probably for a part of the time for her board.

The faculty should determine the requirements for admission, length of course, subjects to be taught, in theory and in practice, diplomas and degrees, vacations, salaries for staff, and other similar matters, and should make all arrangements and adjustments with the hospital.

The board, the controlling body of the school, should be inspired by the fullest appreciation of the social importance of the nurse's work and should have a clear understanding of the scope and extent of her professional field and of the way in which it is developing.

It should be clearly understood that in insisting upon the necessity for a sounder scientific foundation and a fuller knowledge of the principles and the general theory underlying and relative to the art of nursing, there is no thought of minimizing in any degree the importance of the practical training and the value of experience which the hospital provides, nor of reducing it in any way which might tend to render it less serviceable for its purpose. This practical work, however, in the hospital or out of it, always must suffer when the theoretical foundations are weak. No one with any real knowledge of the situation could underestimate the value of the opportunity which the hospital affords the student, of actually living and working among the sick under the supervision and instruction of a staff of expert nurses, whose methods can be studied at close range. In no other way can the student observe and study the various diseases, become familiar with their symptoms, stages, complications, and fluctuations, and watch the effect of treatment and care of them. The steady industry and the ordered life and the increasing responsibility in the hospital supply conditions under which essential qualities of character and habits of thought and action are developed; decision, self-control, fortitude, resourcefulness, and judgment are in some measure built up in the student who becomes a member of a highly-organized staff controlled by a unique and wonderful discipline, and guided by traditions of courage, devotion to duty, and self-sacrificing service for others. So far from undervaluing that which the hospital can give, it is the conviction of the writer that these magnificent opportunities should only be given to students thoroughly prepared to take the fullest possible advantage of them; they should be properly utilized and wisely directed.

STATE REGISTRATION.

ENACTMENTS.

North Carolina, in 1903, was the first State to present a bill and secure a law providing for the State registration of nurses. Within the eight years that have elapsed since that date, 31 States have succeeded in obtaining such laws. In the 5 States of Vermont, Tennessee, Idaho, Oregon, and Wisconsin these laws have been passed in 1911. In New Jersey, where a defective law was enacted in 1903, the State society of nurses is struggling against considerable opposition to secure the passage of a new bill which shall make some definite requirement in the way of educational and other standards for nurses.

A careful study of the laws which have so far been enacted in this country will serve to show that there is still much work to be done, and that as yet the foundations only have been laid upon which may be built bulwarks of suitable strength for the adequate defense of educational standards in nursing. Take that most important feature, preliminary education, and it will be seen that from the standpoint of statutory requirements practically no definite standards exist, since in almost every instance the requirement made is qualified by the term "or an equivalent," and 18 of the 31 enactments make no educational requirement whatever; 6 States (North Carolina, Maryland, Indiana, West Virginia, Oklahoma, and Delaware) ask for a high-school course or "its equivalent;" 2 States (Minnesota and Nebraska) call for high-school entrance examinations; 4 States (California, Missouri, Michigan, and Oklahoma) for a common-school course, or equivalent, and the remaining 18 States leave the matter untouched, to be determined by the examining board or others. What may be accepted as properly constituting a just equivalent of the full high-school course, of one or two years of high-school work, or of a completed grammar-school course, must apparently under present conditions be left to the superintendents and principals of training schools in different States to determine. This would be under any circumstances a difficult and perplexing problem, but under the present system of training-school administration it is a well-nigh hopeless one in the majority of instances. The head of the training school is now unquestionably obliged to give herself great latitude in this matter. She must often interpret this equivalent according neither to the letter nor to the spirit, but in accordance with the requirements of the hospital. This in the last analysis controls more or less arbitrarily the question of preliminary standards of education, and herein lies the reason for the consistent opposition which nurses have met and are likely to meet on this point.

As to the type of hospital in which the practical training may be given, the laws provide for a considerable degree of variety. Several States provide that the school must be connected with a general hospital, which may be further qualified as "registered," "chartered," "approved," or "in good standing." In various other States the training may be in sanatoria, State hospitals, or special hospitals, usually with the provision that a certain additional specified time, which may be from six months to one year, shall be spent in a general hospital. Three States (New Jersey, Pennsylvania, and Massachusetts) make no mention of where the training is to be received, thus leaving the matter entirely in the hands of the examining board.

The occasional use of the word "reputable" suggests problems, as, for instance, when the law requires that the training must have been received in a "reputable hospital." This is practically equivalent to assuming that any hospital which can not actually be proved to be disreputable should be accepted as suitable ground for the education and training of nurses without reference to the character and scope of its work.

In the several laws in which mention is made of the subjects on which the applicant will be examined they are very similar, and include anatomy and physiology, hygiene, materia medica, dietetics or invalid cookery, and practical nursing in the care of medical, surgical, and obstetrical patients.

Notwithstanding, however, the very moderate requirements of these laws as a whole, they have apparently been the means of accomplishing definite, tangible results, and while the indirect influence which they have exerted can not be readily measured, it can be clearly recognized.

It appears from the statements of officers of various State societies that a number of small, private, or special hospitals or sanatoria which had been maintaining schools have been sufficiently affected by the laws to lead them either to seek suitable affiliations or to close the schools and carry on their work by means of a salaried nursing staff.

The effect of the laws upon the larger schools has been salutary, and in a very considerable degree the improvements in curricula noted during the past few years, the increase in teaching equipment, the better living conditions for students are due to the direct and indirect influence of the laws. Members who have served on examining boards for several years have had ample time to note the progressive improvement in successive groups of nurses from the same schools as they have presented themselves from year to year for examination, and nurses themselves are recognizing the fact that a registered nurse has a status in the community publicly and professionally which the unregistered nurse can not ordinarily hope to attain. In a number of the reports from training schools recently received by the Bureau of Education, statements were made that certain improvements and additions had been brought about to enable nurses to qualify for registration.

The opposition to the principle of State registration for nurses and to the enactment of laws providing for it has almost uniformly come from those who control or have some interest in private hospitals or sanatoria in which schools are established to secure nursing without expense, or from the short-term schools in which the pupil performs somewhat the same service in the private practice of one or more physicians. The opposition, however, also comes to some extent from general hospitals dependent upon their training schools and unwilling to support measures which will result in restricting the number of available qualified candidates for admission.

A somewhat careful study of the opposition which has been met both in this country and abroad shows how largely commercial it has been and is in its nature, and to what lengths the exploitation of pupil nurses has been carried. There could indeed be no possible rational objection urged against a procedure the principle of which is recognized as sound in all other professions or vocations in which scientific knowledge and technical skill in definite degree are essential for public safety.

EXAMINING BOARDS.

It has been pointed out that in a few States the laws are so ill-defined, so low in their requirements, or so lacking altogether in this respect, that it seems doubtful if anything can be acomplished through them, since they appear merely to legalize low standards. It is clear that their value as a means of public protection and of uplifting nursing education must depend to an unusual degree upon the board of examiners, upon whom, in the absence of statutory requirements, the responsibility of determining all standards, as well as of interpreting and enforcing them, must rest. Whatever standards in nursing are set up in such States must be by their action, and a weak, inefficient, or timid board will have little effect upon training schools and their work.

An immense responsibility, under any conditions, rests upon these examining boards. They are the agencies through which the laws must work, and while no board, however zealous, able, and energetic can make a poor school give good training, it can be of great and constant service in helping schools to discover their own deficiencies and in making it difficult, if not impossible, for those training schools which are not willing to meet the very modest requirements which the law now makes to continue in operation and to attract candidates.

There is hardly any duty falling upon the State society of nurses of more importance than the nomination from its membership of candidates for appointment to the examining boards. These boards should be composed of the best representatives of the profession. They should be women of liberal education, or as near it as can be found, highly skilled in nursing, broad-minded, courageous, vigorous, and alert. Those who are, or have recently been, teachers, if qualified in other ways make excellent examiners. The board should be carefully organized, with its powers accurately defined. It should have suitable headquarters, properly kept records, and enough clerical assistance to do its work. It should be in a position to know definitely the character and the amount of work which each training school in the State is doing, and it should have a clear idea of the hospitals with which these schools are connected, their standing in the community of which they are a part, their resources, and the scope of their work. The board should have the power of obtaining whatever information it may need, and it should be ready to publish when advisable such statements, suggestions, or instructions as will enable training schools to strengthen themselves in those departments which are shown to be weak. The more carefully one considers the work of the examining board, the more certain does it seem that they have it in their power to do much of that constructive, unifying work for our training schools which is so urgently needed. All work of this nature will of necessity be slow, since in very few of our States are the laws mandatory. In the majority they are permissive only, and in those States anyone is permitted to nurse and to call herself a nurse. The requirement of the law is that she shall not call herself a *registered nurse* or assume a similar title; and even in those States where mandatory laws have fortunately been secured their value will be proportionate to the degree of vigor with which the laws are enforced.

Thus at every turn we are brought back to the examining board and to face squarely its great responsibilities and powers. As yet these boards are working largely upon independent lines, but there is little doubt that they will more and more confer together upon the many problems in nursing education which are of common import, which must be solved with reference to general good and uniform standards, rather than to the special conditions of a special locality.

TRAINING SCHOOL INSPECTION.

For adequate supervision of this branch of woman's education in any State, it will be necessary to develop further the idea of systematic and continuous inspection and supervision of hospitals and training schools. In New York this principle was adopted several years ago, largely owing to the energy and persistence of Miss Sophia Palmer, editor of the Journal of Nursing. The inspector is appointed by the regents, and her work is and has been of incalculable value, recognized as such by the nursing profession throughout the State. In the present stage of nursing education, where the relationships between the training school and the hospital, the physician and the public, present issues of a complicated and confused nature, often difficult of adjustment, there is urgent need of the most patient, careful investigation, study, and thought. Inspectors should be selected with the utmost care from those who have had exceptional education and training and who are recognized as experts in training-school work.

There are now regular inspectors in New York, in Illinois, and in Washington. In Iowa a member of the examining board is appointed to act in this capacity for a certain term, and this apparently holds true of New Hampshire in a sense. In several States members of the examining boards do informal inspection, through their president, secretary, or other selected members. In the American Journal of Nursing for March, 1911, the province of the inspector is thus editorially discussed:

> As the work develops the term inspector seems to be a misnomer, and she is vastly more than an inspector of buildings, equipment, and methods. She not only reports conditions as she finds them, but her work is constructive and advisory, and through her influence chaotic conditions are reduced to order, and affiliations are provided for, which, without the authority and guidance of a State official from the outside, would be impossible to bring about. That she should be not too young, a type of woman who commands not only respect but confidence, and that she herself should have battled with all of the problems of the training school, goes without question. Otherwise she can be little more than a figurehead in the vital work of this period.
>
> The laws for State registration having been brought into effect through the influence of nursing organizations, such organizations have a moral right, at least, to insist that they shall be administered in a manner satisfactory to the highest nursing ideals, and when the appointments of such State officials are made without regard to a proper fitness, whether moral or professional, protest should be vigorous and continued until efficient nurses are installed. * * *
>
> One of the things that nurses must look to in the administration of laws for State registration is the proper recognition by the public of their official representatives, and the only way in which such recognition can be brought about is for the whole nursing body to concede to such officers confidence, loyalty, and support; also such liberal compensation to inspectors and secretaries that as they go about in the performance of duty they may be able to afford the outward manifestations that custom calls for in the person occupying a dignified official position.

Some important features of State laws for registration of nurses.

	States.	Year enacted.	Mandatory or permissive.	Preliminary education required.	Years in course.	Hospital training required.	Composition of examining board.	Title.	Remarks.
1	North Carolina	1903	P.	High school graduate or equivalent.	3	General hospital	3 nurses, 2 physicians	R. N.	
2	New Jersey	1903	P.	None	2	No requirement	No board	R. N.	Power to issue licenses vested in county clerks.
3	New York	1903	P.	None	2	Hospital or sanitarium	Nurses	R. N.	
4	Virginia	1903	M.	None	2	General hospital	Nurses	R. N.	
5	Maryland	1904	P.	High school graduate or equivalent.	3	General hospital	Nurses	R. N.	
6	Indiana	1905	M.	High school graduate or equivalent.	2	General hospital	Nurses	R. N.	
7	California	1905	P.	Grammar school or equivalent.	3	General hospital	No board	R. N.	Power vested in regents of University of California.
8	Colorado	[1] 1905	M.	None	3	General hospital or sanitorium.	Nurses	R. N.	
9	Connecticut	[1] 1905	P.	None	2	([2])	Nurses	R. N.	
10	New Hampshire	1907	P.	None	2	([3])	Nurses	R. N.	
11	District of Columbia	1907	P.	None	2	General hospital	Nurses	R. N.	
12	Iowa	1907	P.	None	3	General hospital	2 physicians, 2 nurses, secretary State board of health.	R. N.	Decisions of State board of health are final.
13	West Virginia	1907	P.	High school graduate or equivalent.	2	General hospital	Physicians	R. N.	Only voters eligible to office.
14	Minnesota	1907	P.	High school entrance or equivalent.	3	General hospital	4 nurses, 1 physician	R. N.	2 nurse members must have two or more years experience in teaching nurses.
15	Illinois	1907	P.	None	3	General hospital	Nurses	R. N.	3 members required to have two years' experience in teaching nurses.
16	Georgia	1907	P.	None	3	Hospital or sanitarium	Nurses	R. N.	
17	Wyoming	1909	M.	None	2	General hospital [4]	Nurses	R. N.	
18	Washington	1909	P.	None	2	General hospital	Nurses	R. N.	
19	Texas	1909	M.	None	2	General hospital or sanitarium.	Nurses	R. N.	
20	Oklahoma	1909	M.	High school graduate (1914) or equivalent.	2	General hospital [5]	Nurses	R. N.	
21	Nebraska	1909	P.	High school entrance or equivalent.	2	General hospital or sanitarium.	Nurses	R. N.	Called board of secretaries, who assist and advise State board of health.

[1] Amended in 1907.

[2] Medical, surgical, or obstetrical cases in public or private hospital.

[3] Hospitals registered by regent State board of medical examiners.

[4] Or 3 years equivalent in special hospitals.

[5] Or special hospital with 6 months' additional general training.

Some important features of State laws for registration of nurses—Continued.

	States.	Year enacted.	Mandatory or permissive.	Preliminary education required.	Years in course.	Hospital training required.	Composition of examining board.	Title.	Remarks.
22	Delaware	1909	P.	High school graduate or equivalent.	3	General hospital	3 nurses, 2 physicians	R. N.	Physicians representing two leading schools of medicine.
23	Pennsylvania	1909	P.	None	2	Surgical and medical nursing.	3 physicians, 2 nurses	R. N.	Physicians must also be hospital officials.
24	Missouri	1909	P.	Grammar school or equivalent.	2	General hospital[1]	Nurses	R. N.	
25	Michigan	1909	P.	Grammar school or equivalent.	2	General hospital[1]	3 nurses, 1 physician, secretary State board of health.	R. N.	
26	Massachusetts	1910	P.	None	2	No requirement	3 nurses, 1 physician, secretary State board of medical registration.	R. N.	Secretary of State board of medical registration, also secretary of board of nurse registration.
27	Vermont	1911	P.	None	2	Any hospital	2 physicians, 1 nurse	R. N.	Physicians must be on staff of hospital having a training school. Nurse—3 years' nursing experience.
28	Tennessee	1911	M.	None	2	Hospital or sanitarium	5 nurses	R. N.	Nurses must have indorsement of nurses society to which they belong.
29	Idaho	1911	P.	None	[2] 2	General hospital approved by board.	2 nurses, 1 physician	R. N.	Both to be nominated by State Association of Graduate Nurses, and 5 years' practice.
30	Oregon	1911	P.	None	2	General hospital (if reputable).	3 nurses	R. N.	Nominated by State Association of Nurses.
31	Wisconsin[3]	1911							

[1] Or equivalent in sanitarium, special, or one or more hospitals.

[2] Three years after 1914.

[3] Details not yet received.

TABLE 1.—*Comparative statistics of nurse training schools.*

Year.	Schools.	Nurse pupils.	Capacity of hospitals (beds).	Graduates.
1911 [1]	1,121	29,805	194,236	7,720
1910	1,129	32,636	214,597	8,140
1900	432	11,164	84,227	3,456
1890	35	1,552	....	471
1880	15	323	....	157

[1] Includes the statistics of three schools in Porto Rico.

TABLE 2.—*Summary of statistics of schools for training of professional nurses, 1910–11.*

States.	Class A, excluding schools connected with hospitals for the treatment of nervous, mental diseases, etc.					Class B, including schools for the treatment of nervous, mental diseases, etc.				
	Schools.	Students.	Graduates.	Capacity (beds).	Average daily number of patients.	Schools.	Students.	Graduates.	Capacity (beds).	Average daily number of patients.
United States	1,048	26,511	6,971	101,708	53,232	70	3,251	738	92,378	[1] 68,856
North Atlantic Division	412	11,707	3,243	46,782	29,537	40	1,828	470	58,096	36,183
South Atlantic Division	131	2,628	627	9,519	4,015	5	208	43	6,925	5,124
South Central Division	72	1,428	336	7,081	2,295	2	48	15	2,700	2,660
North Central Division	330	7,911	2,073	27,881	12,463	23	1,167	210	24,657	24,889
Western Division	103	2,837	692	10,445	4,922	....	....	....	....	....
North Atlantic Division:										
Maine	11	319	72	746	496	2	48	13	1,500	1,390
New Hampshire	14	202	41	503	276	1	60	15	1,114	....
Vermont	10	167	48	390	211	1	17	5	595	....
Massachusetts	70	1,933	554	6,810	3,058	9	581	136	10,674	5,772
Rhode Island	7	261	67	735	521	1	130	15	200	....
Connecticut	17	488	117	1,936	1,272	2	37	14	3,350	....
New York	132	4,147	1,212	18,739	13,479	13	456	170	28,811	23,876
New Jersey	29	700	196	2,504	1,547	4	137	35	5,215	3,556
Pennsylvania	122	3,490	936	14,419	8,677	7	362	67	6,637	1,589
South Atlantic Division:										
Delaware	2	34	11	137	80	....	....	....	....	....
Maryland	20	648	149	2,657	1,612	2	47	18	2,978	2,887
District of Columbia	10	426	131	1,545	566	1	33	15	1,190	1,130
Virginia	21	399	110	1,433	384	1	7	3	1,182	1,107
West Virginia	16	215	48	916	273	....	....	....	....	....
North Carolina	25	311	63	1,019	231	....	....	....	....	....
South Carolina	8	135	37	439	300	1	121	7	1,575	....
Georgia	24	407	66	1,158	467	....	....	....	....	....
Florida	5	53	12	215	102	....	....	....	....	....
South Central Division:										
Kentucky	13	190	57	775	134	1	17	3	1,200	1,150
Tennessee	8	142	43	502	229	....	....	....	....	....
Alabama	6	158	32	462	115	1	31	12	1,500	1,510
Mississippi	6	81	20	476	135	....	....	....	....	....
Louisiana	7	280	75	1,706	311	....	....	....	....	....
Texas	19	377	72	2,124	870	....	....	....	....	....
Arkansas	7	148	31	800	421	....	....	....	....	....
Oklahoma	6	52	6	236	80	....	....	....	....	....
North Central Division:										
Ohio	51	1,151	324	4,546	2,051	3	131	46	4,925	4,831
Indiana	28	488	135	1,449	885	....	....	....	....	....
Illinois	67	2,119	563	7,382	4,231	5	472	38	5,370	6,103
Michigan	39	997	266	3,208	1,161	3	157	34	4,210	3,316
Wisconsin	16	380	109	1,157	632	....	....	....	....	....
Minnesota	27	672	178	2,531	767	3	161	40	2,710	3,735
Iowa	30	686	151	2,073	629	5	138	38	3,720	3,340
Missouri	31	763	194	3,114	1,444	....	....	....	....	....
North Dakota	5	65	19	232	13	....	....	....	....	....
South Dakota	7	99	27	317	55	....	....	....	....	....
Nebraska	17	334	68	1,326	335	2	37	6	1,042	914
Kansas	12	157	39	546	260	2	71	8	2,680	2,650
Western Division:										
Montana	6	126	35	665	180	....	....	....	....	....
Wyoming	3	40	14	210	113	....	....	....	....	....
Colorado	17	429	98	1,808	875	....	....	....	....	....
New Mexico	1	14	6	100	60	....	....	....	....	....
Arizona	....	....	....	....	....	....	....	....	....	....
Utah	4	118	27	425	273	....	....	....	....	....
Nevada	....	....	....	....	....	....	....	....	....	....
Idaho	2	29	6	130	50	....	....	....	....	....
Washington	20	365	98	1,288	474	....	....	....	....	....
Oregon	4	186	50	750	40	....	....	....	....	....
California	46	1,530	358	5,069	2,857	....	....	....	....	....

[1] In so far as reported to this office.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A.*

[Class A excludes schools connected with hospitals for the treatment of nervous and mental diseases, etc.]

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission. Education.[1]	Requirements for admission. Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	ALABAMA.											
1	Birmingham	Hillman Hospital *	Miss O. B. Holt	22	2	4	80					
2	do	St. Vincent's Hospital	Sister Chrysostom	35	3	8	175	90	Yes	10	C. S	18–30
3	Mobile	Providence Infirmary *	Sister Stephanie	26	3	3	80					
4	Montgomery	St. Margaret's Hospital *	Sister Mary Sienna	27	3	2	60					
5	Normal	Agricultural and Mechanical College for Negroes	Pearl L. Younger	12	3	3	22	5	Yes	7	2 years, normal.	18
6	Tuskegee	Tuskegee Institute	John A. Kenney, M. D	36	2	12	45	20	Yes	8	8th grade	18–35
	ARKANSAS.											
7	Fort Smith	Sparks' Memorial Hospital	Menia S. Tye	15	2	3	100	46	No	10	1 year H. S	19–30
8	Hot Springs	Ozark Sanatorium	M. Agnes MacNally	6	2	3	40		No	10	H. S	25
9	do	St. Joseph's Hospital *	Sister Mary Edward	17	2	8						
10	Little Rock	Physicians and Surgeons Hospital	Edward Meek, M. D	25	3	6	75	25	Yes	10	C. S	20
11	do	Little Rock Sanitarium *	W. C. Green, M. D	27	2½		35					
12	do	Pulaski County Hospital	J. Palmer Sheppard, M. D	18	2	1	300	150	Yes	9	8th grade	18
13	do	St. Vincent's Hospital	Sister Bernard	40	2	10	250	200	Yes	8	do	20
	CALIFORNIA.											
14	Eureka	Sequoia Hospital *	Ida M. Mason	10	3	5	45					
15	Fresno	Burnett Sanitarium	Ellen Eunice Garland	20	3	6	53	25	No	10	8th grade	20–35
16	Glendale	Glendale Sanitarium	Belle Wood Comstock, M. D	35	2½	16	60	40	Yes	9	9th grade	19
17	Los Angeles	California Hospital	Anne Armstrong Williamson	82	3	29	150	106	No	12	1 year H. S	21–35
18	do	Clara Barton Hospital	Gertrude E. Constant	42	3	4	62	46	No	9	H. S	20–35
19	do	Los Angeles County Hospital	Charles H. Whitman, M. D	93	2	31	600	500	No	8½	do	20–32
20	do	Emergency General Hospital	Rose M. McDonald	35	2	8	75	45	No		1 year H. S	21
21	do	Hospital of the Good Samaritan	Helen D. Jackson	60	3	13	100	70	No	8	H. S	21–30
22	do	Los Angeles Infirmary	Sister Mary Ann Keating	45	3	12	200		No	9	8th grade	21–35
23	do	Pacific Hospital	Lurain Tracy	30	3	5	50	35	No	9	H. S	20–32
24	Oakland	East Bay Sanatorium	Minnehaha Taylor	30	3	3	35	26	No	9	do	20
25	do	Fabiola Hospital	Jennie E. Jessen	53	3	9	120	53	No	9½	8th grade	21

26	do	Providence Hospital *	Sister Mary Alphonsus	46	3	10	130					
27	Pasadena	Pasadena Hospital	Lyda Anderson	50	3	14	100	65	No	9	H. S	20–25
28	Redlands	Redlands Hospital	Miss F. L. Armstrong	8	3	3	30	10	No	9	1 year H. S	18–30
29	Riverside	Riverside Hospital	Mary Jane Corry	12	3	5	45	23	No	10	H. S	20–24
30	Sacramento	Mater Misericordiae Hospital *	Sisters of Mercy	35	3	3	80					
31	San Diego	Agnew Hospital	Mabel E. Rainbow	31	3	3	50	45	No	9½	2 years H. S	19–35
32	do	San Diego County Hospital	Amelia L. Smith	17	2	8	200	150	No	10	H. S	21
33	do	St. Joseph's Hospital	Mother M. Michael Cummings	10	2¼	3	60	35	Rarely	8½	8th grade	18
34	San Francisco	Buena Vista Sanatorium	Selina Kane	14	3	4	50	30	No	11	do	19–35
35	do	Hospital for Children	S. Milo Hinch	47	3	17	125	83	No	10	1 year H. S	19–33
36	do	French Hospital	Lottie Christine Gansuer	40	2⅔	7	200	120	No	11	8th grade	18–30
37	do	German Hospital	Werner Roehl	75	3	16	220	178	No	10	H. S	20
38	do	Hahnemann Hospital	Therese Adele Smith	27	3	8	130	75	Yes	8	do	21–35
39	do	Lane Hospital	Elizabeth Calya Smith, R. N	72	3	17	200	125	No	8	2 years H. S	20–30
40	do	McNutt Hospital	Anne E. Bowman	25	3	2	100		No	9	H. S	18–28
41	do	Morton Hospital	Ellen Mullen	11	3	2	50		No	9	8th grade	20–30
42	do	Mount Zion Hospital	Jessie F. MacKenzie	30	3	7	52	40	No	9½	H. S	21
43	do	Northwestern Hospital			3	6	34			9		
44	do	St. Francis' Hospital	Elizabeth M. Jamieson	35	3		100		No	10		19
45	do	St. Joseph's Home and Hospital	Sister Lidwina *	18	3	3	136	120	No	11	H. S	18
46	San Francisco	St. Luke's Hospital	Helen Randal	37	3	12	96	66	No	9	1 year H. S	18
47	do	St. Mary's Hospital	Sister M. Agnes White	68	3	11	157	100	No	10	do	20–31
48	do	St. Thomas' Hospital	Evaline McWilley	12	3	3	35	16	Yes	8	H. S	21–30
49	do	St. Winfred's Hospital	Ethel B. Davie	25	3	3	50	35	Yes	8	do	18–30
50	do	San Francisco Hospital	Olive McGinnes	52	2¼	16	400	350	No	9	1 year H. S	20
51	do	Thomas Sanatorium	Elinor M. Casey	12	2½	7	25	20	No	10	H. S	18
52	do	Trinity Hospital	Mrs. Mary V. Millar	34	3		45		No	12	8th grade	21–30
53	Sanitarium	St. Helena Sanitarium and Hospital	H. F. Rand, M. D	62	3	8	250	200	No	10	3 years H. S	20
54	San Jose	San Jose Training School for Nurses of the O'Conner Sanitarium	Sisters of Charity	34	2,3	11	110		Yes	9	1 year H. S	22
55	San Leandro	Alameda County Hospital *	Jeannie Cecele Burke	12	2½		150					
56	Santa Barbara	Cottage Hospital	Laura Laing Mitchell	15	3	3	30	23	No	9	8th grade	21
57	Santa Monica	Santa Monica Bay Hospital *	M. L. Loomis, M. D	8	3	1	26					
58	Stockton	St. Joseph's Hospital	Sisters in charge	17	3		40			8	1 year H. S	22
	COLORADO.											
59	Boulder	Boulder Colorado Sanitarium	Grace E. Mitchell, R. N	48	3	5	100	60	Yes	10	8th grade	19–35
60	do	University of Colorado	Jean McIntosh, R. N	12	3		40	25	Yes	9	H. S	19–30
61	Colorado Springs	Bethel Hospital	Florence E. Standish	20	3	2	64	30	No	8½	do	20
62	do	Glockner Sanatorium *	Janet MacPherson	24	3	3	165					
63	Denver	Colorado Training School for Nurses of the City and County Hospital	Signa M. Freek	40	3	12	300	285	No	8½	H. S	20–32
64	do	Mercy Hospital *	Miss C. C. Feeney	48	3	9	115					
65	do	Park Avenue Hospital	Marie V. Layman	14	3	3	27	19	Yes	9	8th grade	23–30
66	do	St. Joseph's Hospital	Margaret Josephine Kimbal	68	3	15	300	175	No	9	do	21
67	do	St Luke's Hospital	Elizabeth Kyle	54	3	17	130	101	No	9	H. S	20–30
68	Fort Collins	Fort Collins Hospital	Harriet Amelia Dawson, R.N	14	3	6	25		Yes	9	do	18–30
69	Glenwood Springs	Glenwood Springs Sanitarium	Sadie B. Allison	7	2	3	50	10	Yes	10	1 year H. S	20–30
70	Greeley	Greeley Hospital	Luella McCalpin, R. N	10	2⅓	4	27		No	10	H. S	18–30
71	Longmont	Longmont Hospital	Martha A. Converse	8	2	1	15	7	Yes	9	do	20

* Statistics of 1910.

[1] Abbreviations used: C. S.—Common school. H. S.—High school.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	COLORADO—continued.											
72	Loveland	Dr. W. B. Sutherland's Private Hospital	W. B. Sutherland, M. D	6	2	2	25	8	Yes	12	H. S	21
73	Pueblo	Minnequa Hospital	Laura A. Beecroft	27	3	7	150	110	No	9	8th grade	18–35
74	do	St. Mary's Hospital *	Katherine O'Shaughnessey	12	3	9	125					
75	Trinidad	St. Raphael's Hospital	Sisters in charge	17	3		150	45	Yes	8	8th grade	20–31
	CONNECTICUT.											
76	Bridgeport	Bridgeport Hospital	Elizabeth F. Oliver, R. N	45	2½	15	175	115		9	H. S	21–35
77	do	St. Vincent's Hospital	Sister M. Alice Gannon	28	3	5	120	100	Yes	8	do	21
78	Danbury	Danbury Hospital	Susanna W. Cutler	20	2½	5	60	40	Yes	12	do	20–30
79	Hartford	Hartford Hospital	Lauder Sutherland	90	3	18	400	313	No	9	1 year H. S	20
80	do	St. Francis' Hospital	Sister Teresa	61	3	10	250	200	Yes	10	8th grade	20–35
81	Meriden	Meriden Hospital	Rose G. Reed	12	2½		54	25	No	10	H. S	18
82	Middletown	Middlesex Hospital	Sarah E. Hyde	14	2½	4	70	39	No	8½	8th grade	21
83	New Britain	New Britain General Hospital	Jennie L. Bassett	13	2½	5	60	40	No	10	H. S	20–32
84	New Haven	Grace Hospital	Marian Little	24	3	5	90	57	No	9	do	22–35
85	do	Connecticut Training School for Nurses of the New Haven General Hospital.	Emma L. Stowe	75	3	29	225	150	Yes	9½	do	21
86	do	St. Raphael's Hospital *	Josephine Coffey	34	3		142					
87	New London	Memorial Hospital	Nelly R. Burby, R. N	16	2	6	52	32	No	9	1 year H. S	22–35
88	Norwalk	Norwalk Hospital	Alice B. King	8	2	3	40	20	No	10	H. S	20
89	Norwich	William W. Backus Hospital	May L. Love, R. N	7	2	4	63	40	No	9	do	21–35
90	Stamford	Stamford Hospital	Evelyn M. Wilson	12	2½	6	35	32	Yes	11	do	20
91	Waterbury	Waterbury Hospital	Mary A. Andrews	20	2½		65	40	No	9	8th grade	20
92	Winsted	Litchfield County Hospital	Amy J. Robinson	9	3	2	35	20	No	10½	H. S	20
	DELAWARE.											
93	Wilmington	Delaware Hospital	Jennette F. Duncan	20	3	6	67	50	No	9	C. S	18
94	do	Homoeopathic Hospital	Alida H. Turner	14	3	5	70	30	Yes	10	do	20

	DISTRICT OF COLUMBIA.											
95	Washington	Capital City Training School for Nurses of the Washington Asylum Hospital.	Margaret P. Pridham	21	3	15	200	165	No	10	do	20–35
96	do	Children's Hospital *	Margaret Woodworth	30	3	4	105					
97	do	Freedmen's Hospital	Laura R. MacHale	40	3	13	278	161	No	9	H. S	21
98	do	Garfield Memorial Hospital	Georgia M. Nevins	45	3	17	225	130	No	8	H. S	22
99	do	Georgetown University Hospital *	Sister Mary Bertrand, R. N.	34	3	3	150					
100	do	George Washington University Hospital	W. C. Borden, M. D	39	3	14	104	110	No	8	8th grade	19–30
101	do	National Homœopathic Hospital *	Marian Little	27	3	6	85					
102	do	Providence Hospital *	Sister Camilla	66	3	16	310					
103	do	Lucy Webb Hayes National Training School of the Sibley Memorial Hospital.	Pansy A. Havens, R. N.	120	2½	39	75	54	Rarely	8	H. S	20
	FLORIDA.											
104	Gainesville	National Odd Fellows' Sanitarium	Miss N. F. Swan	4	2	1	35	17	Yes	8–10	do	18
105	Jacksonville	De Soto Sanatorium	Pauline B. Pleasants	17	3	6	36	25	No	9½	C. S	20–35
106	do	St. Luke's Hospital	Mary A. Baker, R. N	19	2½	3	65	35	No	9		18–31
107	Pensacola	Mission Hospital *	Frances Mann	3	2		19					
108	St. Augustine	East Coast Railway Hospital	S. G. Wooley, M. D	10	3	2	60	25	Yes	8	C. S	21
	GEORGIA.											
109	Atlanta	Atlanta Hospital	Maude Gulledge, R. N	10	3	3	20	13	No	8	8th grade	18–30
110	do	Elkin-Goldsmith Sanatorium	Jessie M. Candlish, R. N	10	3	3	22	18	No	10	H. S	20
111	do	Grady Memorial Hospital *	Miss A. B. Feebeck, R. N.	37	3	6	125					
112	do	Morris Brown College Fair Haven Infirmary	H. R. Butler, M. D	22	3	4	10	5	Yes	9	8th grade	18
113	do	St. Joseph's Infirmary	Catherine E. Moran	50	3	4	75	70	No	9	H. S	19,35
114	do	Spelman Seminary McVicar Hospital	Amanda J. Lawson	21	3		30	2	No	8	8th grade	20
115	do	Tabernacle Infirmary *	Martha W. Harris, R. N	45	3	7	75					
116	do	Wesley Memorial Hospital	Mary E. Cloman, R. N	24	3	9	50	40	No	8½	H. S	18
117	Athens	St. Mary's Hospital	Mary Elizabeth Simpson, R. N.	4	3		18	10	No	8½	do	18
118	Augusta	Augusta City Hospital	Mary A. Moran, R. N	22	3	2	70	40	No	8	1 year H. S	21
119	do	Lamar Hospital *	Mittie White	12	3	4	60					
120	Brunswick	Brunswick Hospital	Luell C. Meier, R. N	3	3	1	50	10	No	8½	C. S	18–35
121	Griffin	Griffin Hospital	Lilly May Madera	5	3	1	36	10	Yes	8½	H. S	21–35
122	La Grange	La Grange Sanatorium	Daisy O'Donovan Rossa, R. N.	3	3		20	15	Yes	12	do	20
123	Macon	Macon Hospital	Margaret J. Moran, R. N.	18	3	2	78	45	No	7½	do	21
124	Sandersville	Rawling's Sanitarium *	Annie L. Mills	16	3	5	35					
125	Savannah	Charity Hospital *	Mary W. Long	10	2	4	24					
126	do	Georgia Infirmary	Tola Belle Hastings, R. N	7	2	1	50	38	Yes	11½	8th grade	21
127	do	Oglethorpe Sanatorium	Martha Stone Raines, R. N.	16	3		30	25	No	7	H. S	18
128	do	Park View Sanatorium	Clara Alice Mathiack	18	3	3	65	50	No	8	C. S	21–32
129	do	St. Joseph's Hospital	Sisters in charge	15	3	1	100		No	9	do	20
130	do	Savannah Hospital	Mary Blythe Wilson, R. N	14	3	3	60	40	No	9	do	21–35
131	do	Telfair Hospital	Mary Carter Peyton	18	3	3	40	36	No	10	H. S	21–32
132	Valdosta	Union Hospital *	Mary Woolridge	7	3		15					
	IDAHO.											
133	Boise	St. Luke's Hospital	Lillian Long	21	3	6	70	50	No		2 years H. S	21
134	Lewiston	St. Joseph's Hospital	Sister Mary Borgia	8	3		60		No		H. S	21

* Statistics of 1910.

[1] Abbreviations used: C. S.—Common School. H. S.—High School.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	ILLINOIS.											
135	Aurora	Aurora Hospital	Nettie B. Jordan, R. N.	10	2½	....	25	20	No	9	8th grade	20
136	Canton	Graham Hospital	Harriet C. Peck	8	3	....	27	13	No	9	1 year H. S.	20
137	Champaign	Julia F. Burnham Hospital	Mary Margaret Uglow, R. N.	15	3	4	45	22	No	10	H. S.	20–30
138	Chicago	Augustana Hospital	Lila Pickardt, R. N.	95	3	18	200	170	No	9	8th grade	21
139	....do	Chicago Hospital *	Mrs. E. B. McWhorter	35	3	14	40	......	......	......	......	......
140	....do	Chicago Baptist Hospital	Mrs. Julia Barnes Adams, R. N.	28	3	18	78	60	No	8½	H. S.	21
141	....do	Chicago Homœopathic Hospital	Eleanor C. Gough	15	3	3	50	35	No	9	....do	21
142	....do	Chicago Maternity Hospital	Effa V. Davis, M. D.	10	1	5	20	15	Rarely	10	C. S.	18–20
143	....do	Chicago Policlinic Hospital	Mary C. Stewart, R. N.	40	3	....	75	80	No	10	1 year H. S.	20–35
144	....do	Chicago Union Hospital *	Martha A. Pepperelt, R. N.	25	3	5	55	......	......	......	......	......
145	....do	Illinois Training School for nurses of the Cook County Hospital.	Helen Scott Hay, R. N.	190	3	48	1,800	1,500	No	9	1 year H. S.	20–35
146	....do	Englewood Hospital	Emelia Dahlgren	39	3	10	100	90	No	10	H. S.	20
147	....do	Frances E. Willard Hospital	Mary Bird Talcott, R. N.	35	3	8	70	55	No	9	2 years H. S.	20–35
148	....do	Garfield Park Hospital	H. P. Skiles, M. D.	20	3	5	45	40	No	10	1 year H. S.	20
149	....do	German Hospital of Chicago	Nina Dale, R. N.	26	3	8	75	60	No	9	....do	20
150	....do	German American Hospital *	Anna T. Schering	25	3	6	60	......	......	......	......	......
151	....do	Grace Hospital *	Edna Locke Hamilton	20	2	9	40	......	......	......	......	......
152	....do	Hahnemann Hospital	Grace E. Ward, R. N.	44	3	6	112	60	No	9½	C. S.	22
153	....do	Jefferson Park Polyclinic and Hospital*	Lillian E. Saul, R. N.	29	3	17	40	......	......	......	......	......
154	....do	Lakeside Hospital	Caroline Soellner, R. N.	28	3	8	60	......	No	10	1 year H. S.	20
155	....do	Lake View Hospital	Edith Mayon	11	3	3	20	16	No	9	....do	20
156	....do	Mary Thompson Hospital	Addie R. Mullin, R. N.	18	3	7	93	50	No	......	H. S.	20
157	....do	Mercy Hospital	Sister Mary Rita, R. N.	106	3	37	250	15	No	9	2 years H. S.	21–30
158	....do	Michael Reese Hospital	......	.....	3	36	400	300	No	8½	H. S.	21–35
159	....do	Norwegian Lutheran Deaconess Home and Hospital.	Deaconess Malinda Munson	25	3	6	100	75	Rarely	12	C. S.	18
160	....do	Norwegian Tabitha Hospital	Bella Olsen	20	3	10	45	35	No	9	....do	20
161	....do	Passavant Memorial Hospital	Eliza C. Glenn, R. N.	32	3	7	70	......	No	......	2 years H. S.	20–35
162	....do	Peoples' Hospital	I. Clark Gary, M. D.	4	2	1	50	25	No	8	C. S.	20–35
163	....do	Presbyterian Hospital	M. Helena McMillan, R. N.	110	3½	25	200	184	No	8	H. S.	20–30
164	....do	Provident Hospital	Jeannette S. Lyon	21	3	9	65	35	No	8½	....do	20–27
165	....do	Ravenswood Hospital	Sidney K. Appel, R. N.	24	3	1	50	39	No	8½	2 years H. S.	20

166	.....do	Rhodes Avenue Hospital*	Helen W. O'Malley	30	3	10	70					
167	.....do	St. Bernard's Hotel Dieu	Sister Alice Burns	48	3	8	200	110	No	9	1 year H. S	20–30
168	.....do	St. Elizabeth's Hospital*	Sister Engratia	30	3	3	250					
169	.....do	St. Joseph's Hospital	Sister Camilla	47	3	6	127	95	No	10	C. S	21–30
170	.....do	St. Luke's Hospital	Margaret E. Johnstone, R. N	125	3	23	340	250	No	8½	H. S	20–31
171	.....do	St. Mary of Nazareth Hospital	Sister Ambrosia Krygier	42	3	12	160	10–15	No	9	1 year H. S	21–35
172	.....do	South Chicago Hospital*	Sylva Bell	16	3	5	50					
173	.....do	Streeter Hospital	Mildred R. Winans	14	3	4	28		No	9	H. S	21
174	.....do	Swedish Covenant Hospital	Katrine Fiske	15	3	6	45	25	No	8	1 year H. S	20–35
175	.....do	Washington Park Hospital	Frances Regenia Wilson, R. N	40	3	6	75	60	No	9	.....do	20
176	.....do	Wesley Hospital	Bertha L. Knapp, R. N	100	3	23	265	160	No	9	H. S	20–30
177	.....do	West Side Hospital	Bertha E. Brunneman	46	3	12	100	65	No	9	.....do	20
178	Danville	Lake View Hospital	Maud Northwood, R. N	14	3	5	45	33	No	12	1 year H. S	20–30
179	Dixon	Dixon Public Hospital	N. Elizabeth Casey	10	3	5	21	18	No	9	2 years H. S	18–30
180	East St. Louis	Henrietta Hospital	Mrs. Rose P. Mitchell	10	3	2	50	35	No	8	H. S	21–30
181	Elgin	Sherman Hospital	C. Irene Olney, R. N	20	3	9	40	30	No	9	1 year H. S	20–32
182	Evanston	Evanston Hospital	Helen L. Bloomfield, R. N	28	3	5	75	60	No	9	.....do	20–35
183	Freeport	Globe Hospital	Annie R. Pengilly	8	3		25	22	No	10		20–35
184	Galesburg	Galesburg Hospital	Louise Eggert	28	3	7	85	46	No	9	H. S	20
185	Jacksonville	Passavant Memorial Hospital	Ida B. Venner	16	3	4	50	30	No	9	1 year H. S	20–35
186	Joliet	Silver Cross Hospital	Rachel Tanner	10	3	3	50	35	No	12	H. S	21–35
187	Macomb	Marietta Phelps Hospital	Rowena H. Raymond, R. N	12	2	4	24	15	No	9	.....do	20
188	Moline	Moline Public Hospital*	Margaret Rooney	16	3		60					
189	Monmouth	Monmouth Hospital	E. Proctor, R. N	11	2½	4			No	9	H. S	20–30
190	Murphysboro	St. Andrew's Hospital*	Sister Mary Walburger	2	3	3	35					
191	Normal	Brokaw Hospital*	Lula J. Justis	20	3	8	60					
192	Oak Park	Oak Park Hospital	Sister St. Laurence	75	3	6	50	44	No	9	H. S	20–30
193	Ottawa	John Stuart Reyburn Memorial Hospital	Elizabeth Ann Asseltine	12	3		25	16	No	8½	1 year H. S	20
194	Peoria	John C. Proctor Hospital*	Lucy Breen	38	3	10	90					
195	Quincy	Blessing Hospital	Florence Burt, R. N	18	3	8	75	30	No	9	.....do	20
196	Rockport	Rockport City Hospital*	Elizabeth Knight Smith	25	2	8	50					
197	Rock Island	St. Anthony's Hospital*	Anna T. Legris	12	2½	2	45					
198	Springfield	St. John's Hospital	Sister Benedictes	38	2½	11	220	9–10	No	9	8th grade	18
199	.....do	Springfield Hospital*	Rosa Waltke	19	3	7	70					
200	Waukegan	Jane McAlister Hospital	Martha J. Heil, R. N	8	3		42	33	No	12	1 year H. S	20
	INDIANA.											
201	Crawfordsville	L. L. Culver Union Hospital	Mabel R. Van Auker	5	2	2	15	9	No	9	H. S	20
202	Elkhart	Elkhart Training School of the Clark Hospital	Agnes E. Moloney	9		3	15	12	Yes	9	1 year H. S	19–30
203	Evansville	Crescent Sanitarium	W. Pfeifer	8	3		15	12	Yes	12	H. S	21
204	.....do	Evansville Sanitarium	Elizabeth Hannan	15	3		25	20	No	10	.....do	20–32
205	.....do	Mary Jane Gilbert Memorial Hospital*	Blanche Pyne	9	3		20					
206	.....do	St. Mary's Hospital	Sister Zoe	25	3	10	125	80	Yes	8	C. S	18
207	Fort Wayne	Hope Hospital	Laura R. Logan, B. A	30	3	10	60	45	No	8	1 year H. S	20–35
208	.....do	Lutheran Hospital	Mary B. Ludy	35	3	11	75	65	No	9	8th grade	19
209	Indianapolis	Indianapolis City Hospital	Florence J. Martin, R. N	50	3	18	293	211	No	9	C. S	21
210	.....do	Joseph Eastman's Hospital	Mary Gertrude Hearn, R. N	8	2	3	16	10	Yes	10	H. S	21
211	.....do	Dr. W. B. Fletcher's Sanatorium	Urbana Spink	25	3	7	50	40	No	12	8th grade	18
212	.....do	Methodist Episcopal Hospital	Jessie A. Hern, R. N	40	3	14	65	60	No	9	1 year H. S	21–35
213	.....do	Protestant Deaconess Hospital	Selina S. Segerlund	56	3	13	126	96	No	9	8th grade	21

* Statistics of 1910.

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TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	INDIANA—continued.											
214	Indianapolis	St. Vincent's Hospital *	Sister Margaret	37	3	11	135					
215	Jeffersonville	Jeffersonville City Hospital	Mary King	5	2	2	12	5	Yes	8	8th grade	20
216	La Fayette	Home Hospital	Fanny Elizabeth Knecht, R. N.	15	3	2	45	25	No	9	H. S	21–35
217	do	Wabash Valley Sanitarium	F. A. Loop, M. D	18	3	1	30	25	Yes	10	8th grade	20–35
218	Lebanon	Williams Hospital	Olive H. Goin	5	3	3	10	4	Yes	9	H. S	18–25
219	Madison	Denny's Sanitarium	George E. Denny, M. D	4	2	2	20	10	Yes	12	C. S	19
220	do	King's Daughters' Hospital	Laura Belle Roser	3	2	1	10	5	Yes	10	do	18–21
221	Marion	Grant County Hospital	Marion Whitten	10	3	2	22	16	Yes	9	8th grade	20
222	Muncie	Home Hospital	Bernetha M. Smith, R. N	3	2	1	20	8	No	9	H. S	19
223	Richmond	Reid Memorial Hospital	Mary B. Sollers	14	3	6	65	35	No	8½	do	20
224	South Bend	Epworth Hospital	Edith E. Willis, R. N	20	3	2	50	30	Rarely	9	do	21–35
225	do	Lewis Hospital *	Margaret K. Lewis	3	2½	2	25					
226	Terre Haute	Union Hospital	Ethel L. Chisholm, R. N	20	3	3	60	40	No	9	C. S	20–32
227	Valparaiso	Christian Hospital	Mrs. Nora Woodruff	10	2½	4	25	10	Yes	10	H. S	20–30
228	Vincennes	Good Samaritan Hospital	Minnie E. Haman	6	2	2	20	12	Yes	10	do	21
	IOWA.											
229	Boone	Eleanor Moore Hospital	Mary Elizabeth Good	8	3	3	30	10	Yes	8	H. S	21–35
230	Burlington	Burlington Hospital	Miss C. C. Keeler	22	3	5	65	45	Yes	10	8th grade	20
231	Cedar Rapids	Mercy Hospital *	Sister Mary Alphonsus	20	3	2	70					
232	do	St. Luke's Hospital	Grace E. Baker	25	3	4	65	40	No	10	8th grade	20
233	Centerville	St. Joseph's Mercy Hospital *	Sister Mary Evangelista	6	3		28					
234	Clinton	Agatha Hospital	Marietta Tanner	21	3	4	50	40	No	8	H. S	18
235	do	St. Joseph's Mercy Hospital	Rev. Mother M. Pius	19	3	6	50			9	do	20
236	Council Bluffs	James Edmundson Memorial Hospital	Ella M. Stimbach	23	3	5	55	33	No	12	do	21–30
237	do	Mercy Hospital	Sister Mary Thomas, R. N	25	3	10	150	75	Yes	9	8th grade	20
238	Davenport	do	Sister Mary Alphonsus	30	3	7	100		No	10	H. S	21–30
239	do	St. Luke's Hospital	Martha Oaks	15	3	4	45	25		10	do	21–35
240	Des Moines	Iowa Methodist Hospital	Millicent Schoar	65	3	10	145	110	No	9	1 year H. S	19–35
241	do	Mercy Hospital	Sister Mary Mechtildes	45	3	10	100	90	No	9	8th grade	19–35
242	Dubuque	Finley Hospital	Alice E. Isaacson, R. N	24	3	7	50	30	No	8½	1 year H. S	20–30
243	do	St. Joseph's Mercy Hospital	Sister Mary Ursula	40	3	4	220		No	10	C. S	19–30

244	Iowa City	Iowa State University Hospital *	Mary E. Nesbit	56	3	7	125					
245	....do	University Homeopathic Hospital	Anna C. Goodale	12	3	4	30	20	Yes	9	1 year H. S	
246	Iowa Falls	Ellsworth Hospital	Margaret Stoddard	3	3		15	6	Yes	7–9	C. S	20
247	Keokuk	W. C. Graham Protestant Hospital *	Mary C. Jackson, R. N	10	3	2	35					
248	....do	St. Joseph's Hospital	Sister Superior	13	3	4	150		Yes	10	H. S	24
249	Lyons	St. Joseph's Mercy Hospital *	Sister Mary Louis	20	3	3	80					
250	Marshalltown	Mercy Hospital	Sister M. Dorothy	8	3	4	30		Yes	9½	1 year H. S	18–25
251	Mason City	City Park Hospital*	Helen Gill,	7	3		25					
252	Muscatine	BenjaminHershey Memorial Hospital	M. Grace McIlvary	8	3		25	13	Yes	9	H. S	20
253	Nevada	Iowa Sanitarium	C. W. Heald, M. D	21	3	6	40	33	Yes	6–10	8th grade	18–35
254	Ottumwa	Ottumwa Hospital *	Elizabeth Trotter	12	3	5	50					
255	Sioux City	German Lutheran Hospital	Dorothy Fick	18	3	5	44	30	No	8	H. S	20
256	....do	St. Joseph's Mercy Hospital *	Sister Mary Daniel	55	3	14	100					
257	....do	Samaritan Hospital *	Nellie M. Porter	31	3	9	65					
258	Waterloo	Synodical Presbyterian Hospital	Aurilla J. Perry	18	3	7	36	29	No	9	H. S	18–35
	KANSAS.											
259	Ellsworth	Ellsworth Hospital	Henry Z. Hissem, M. D	4	2	3	15	4	Yes	12		19
260	Kansas City	Methodist Training School of the Bethany Hospital.	Elizabeth J. Eason	25	3	5	50	30	Yes	9	H. S	20–35
261	....do	Douglass Hospital	Frances M. Williams	5	2		20		Yes	10	....do	20
262	Lawrence	Lawrence Hospital	Laura Hostetter	6	3		20	10	Yes	10	....do	20
263	Leavenworth	Cushing Hospital	Almey C. Murray	9	2	3	75	25	Yes	8	8th grade	20
264	....do	St. John's Hospital	Sister Mary Rita	10	3	2	60		Yes	10	H. S	21
265	Pittsburg	Mount Carmel Hospital	Sister M. Alphonsus	8	2	3	40	25		9½	....do	19
266	Rosedale	University of Kansas	Minerva Wilson, R. N	13	3	4	25	20	No	9	....do	20–30
267	Salina	St. Barnabas' Hospital	Lydia M. O'Donnell	4	3		31	7	Yes	9	C. S	20–35
268	Topeka	Christ's Hospital	Alice Muriel Gaggs, R. N	35	3	8	85	56	No	9	H. S	21–32
269	....do	Jane C. Stormont Hospital	Theresa Smith	16	3	4	50	33	Yes	8½	....do	20–35
270	Wichita	Wichita Hospital	Isabel M. Woodburn	22	2½	7	75	50	No	10½	1 year H. S	21
	KENTUCKY.											
271	Dayton	Speers Memorial Hospital *	Sophia Steinhauer	21	3	8	75					
272	Franklin	Southern Kentucky Sanatorium	Flora Keen, R. N	6	3	1	26	15		9	1 year H. S	20–35
273	Henderson	City Hospital *	Sarah J. Barnett	6	2	3	20					
274	....do	Letcher Hospital *	Katherine M. Shaw	4	3		12					
275	Lexington	Good Samaritan Hospital *	Mary R. Shaver	38	3	7	100					
276	Louisville	Children's Free Hospital	Katherine M. Arnold	10	3	1	50	35	No	9	H. S	20–35
277	....do	Citizens National Hospital	E. A. Jackson	6	3	2	12	4	Yes		8th grade	18
278	....do	German Methodist Deaconess Home and Hospital.	Elizabeth Borcherding	17	2	10	33	30	No	10	C. S	19–35
279	....do	Jewish Hospital *	Katherine Daum, R. N	8	3		60					
280	....do	John N. Norton Memorial Infirmary	Nellie Gillette	34	3	10	100	50	No	9	C. S	20
281	....do	Louisville City Hospital *	Eliza Johnson	28	3	18	250					
282	....do	Red Cross Sanitarium *	Petra F. Pinn	6	3	1	12					
283	Owensboro	Owensboro City Hospital *	Ella Green Davis	6	3	1	25					

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* Statistics of 1910.

[1] Abbreviations used: C. S. = Common school. H. S. = High school.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	LOUISIANA.											
284	Alexandria	Alexandria Sanitarium	J. L. Wilson, M. D	4	2	1	20	8	Rarely	12	G. S	18
285	New Orleans	Charity Hospital*	Sister Dolores	128	2	39	1,050					
286	do	Hotel Dieu	Sister Mary Grace	30	3	6	60	54	No	10½	C. S	20
287	do	Sarah Goodridge Hospital	R. T. Fuller, M. D	8	3	4	16	12	Yes	7	8th grade	18
288	do	Touro Infirmary	E. K. Zeller	60	3	15	160	130	No	9	C. S	21–35
289	Shreveport	T.E.Schumpert Memorial Sanitarium	Sister Mary Raphael	28	2½	8	200	115	No	10	C. S	20–35
290	do	Shreveport Charity Hospital	J. M. Callaway, M. D	22	2	2	200		No	11	H. S	21
	MAINE.											
291	Augusta	Augusta General Hospital	Mrs. Sarah Hayden	20	3	2	58		Yes	9	do	22–35
292	Bangor	Eastern Maine General Hospital	Ida Washburne	35	3		120	85	No	9		23–35
293	Biddeford	Trull Hospital	Lucy Jeannette Potter, R. N	24	3		50	25	Yes	11	H. S	23
294	Lewiston	Central Maine General Hospital	Rachel A. Metcalfe	33	2¼	8	75	60	No	10	do	21
295	do	St. Mary's General Hospital	Sister Campeau	20	2¼	6	140	85	Yes	8–9	do	21
296	Portland	Children's Hospital	Helen L. Redfern	24	2½	5	70	64	No	9½	do	20–30
297	do	Dr. King's Private Hospital	Minerva Kenrick	9	3	2	28		No		do	21–35
298	do	Maine Eye and Ear Infirmary	Nellie M. Pine	18	3	3	75	38	No	9	do	21–28
299	do	Maine General Hospital	Harriet M. Hohenfeld, R. N	55	3	20	175	108	No	8	do	21
300	do	St. Barnabas' Hospital	Maud B. Rooney	75	3	25	30	21	No	12	do	21
301	Rockland	Knox County Hospital	Margaret D. Sibley	6	2¼	1	25	10	No	9	do	21–31
	MARYLAND.											
302	Baltimore	Biedler-Sellman Hospital	Pearle A. Beuling, R. N	14	3	3	125		No	8½	do	21
303	do	Church Home and Infirmary	Edith R. Bennett	46	3	11	185	135		10	do	21
304	do	Franklin Square Hospital	Florence E. Garner, R. N	16	3	3	90	48	No	9	do	20–35
305	do	Robert Garrett Hospital for Children	Sarah F. Martin, R. N	10	2–3	3	32	21	No	12½		
306	do	Hebrew Hospital	Mary Belle Struble, R. N	24	3	6	100	90	No	10	C. S	19–33
307	do	Hospital for the Women of Maryland	Frances K. M. Butler	6	3		59	41	No		H. S	22
308	do	Johns Hopkins Hospital	Elsie M. Lawler, R. N	139	3	35	360	307	No	8	do	22–35
309	do	Maryland Homœopathic Hospital	Mary J. Putts	20	3	5	65	45	No	10	do	20–35
310	do	Maryland General Hospital	A. E. Wheeler	34	3	9	150	130	No	10½	8th grade	21

311	....do	Mercy Hospital	Sister Mary Claude Raden, R. N.	66	3	18	300	275	No	9	H. S	22–30
312	....do	Provident Hospital*	Annabel Wilson	6	3	1	25					
313	....do	St. Agnes's Hospital*	Sister M. Lama	38	2, 3	5	255					
314	....do	St. Joseph's German Hospital	Sisters of St. Francis	42	3	7	234	170	No	8	H. S	20–32
315	....do	Union Protestant Infirmary	Roberta L. Ball	45	3	14	110	80	No	9–9½	1 year H. S	22–35
316	....do	University Hospital	Alice F. Bell	75	3	17	253	200	No	9	....do	20
317	Cumberland	Allegany Hospital	Sister Angelica	15	3	2	40	25	No	9	2 years H. S	21–27
318	....do	Western Maryland Hospital*	Florence A. Tanney	20	3	2	52					
319	Frederick	Frederick City Hospital	Mary Loose Nies	8	3	2	50	30	No	10	H. S	20–35
320	Hagerstown	Washington County Hospital	Emma M. Glover	10	3	3	22	15	Yes	9	....do	20–30
321	Salisbury	Peninsula General Hospital*	Mary Francis Sheil, R. N	14	3	3	150					
	MASSACHUSETTS.											
322	Attleborough	Attleborough Sanitarium*	Mary B. Nicola	15	3		75					
323	Beverly	Beverly Hospital Corporation	Alice C. S. Cushman, R. N	16	2½	2	50	30	No	9	H. S	21–35
324	Boston (Jamaica Plain)	Adams Nervine Asylum	Susan E. Tracy	19	2⅔	4	52	50	No	10	....do	21–30
325	Boston	City Hospital	Emma M. Nichols, R. N		3	39	1,061		No	9	C. S	23–35
326	Boston (South Boston)	Carney Hospital	Sister Marciana	67	3	25	200		Yes	8	H. S	21–32
327	Boston	Charitable Eye and Ear Infirmary	Mary Carnahan	4–6	2		210	150	No	9½		
328	....do	Children's Hospital	Sister Margaret	8-12	3	10	100	70	No	8	H. S	21
329	....do	Cushing Hospital	Olga Cushing Leary, M. D	15	2	5	30	24	No	10	....do	21
330	....do	Emerson Hospital	Frances W. Cockburn, R. N	30	3	8	48	28	Yes	10	....do	21–30
331	Boston (Jamaica Plain)	Faulkner Hospital	Alice K. Ruggles	13	3	5	30	18	No	9½	....do	21
332	Boston	Massachusetts General Hospital	Sara E. Parsons, R. N	140	3	34	322	303	No	8	....do	19–36
333	....do	Massachusetts Homœopathic Hospital	Alice H. Flash	100	3	30	350	251	No	9	....do	21–30
334	....do	Long Island Hospital	Charles E. Donlan, M. D	37	2	13	319	304	No	11	C. S	21–30
335	....do	Lying-in Hospital	Jean C. Cartwright	23	1⅓		46	38	No	10		23–35
336	....do	New England Baptist Hospital	Emma A. Anderson	25	2⅓	8	50	40	Yes	10		
337	....do	New England Deaconess Hospital	Adeliza A. Betts, R. N	28	3	11	50	43	Yes	9	H. S	21–32
338	....do	New England Hospital for Women and Children.	Jane Merwin Barker, R. N	31	3	13	150	78	No	9	....do	21
339	....do	Plymouth Hospital	Cornelius N. Garland, M. D	12	3	4	15		Yes	6	C. S	19–35
340	....do	St. Elizabeth's Hospital	Thomas F. Harrington, M. D	26	3	6	11C	66	Rarely	10	H. S	
341	....do	Woman's Charity Club Hospital	Eva M. Moore	14	2	8	30		No	8	C. S	21
342	Brockton	Brockton Hospital	Grace B. Beattie, R. N	20	2½		50	39	No	9	H. S	21–30
343	Cambridge	Cambridge Hospital	Nellie G. Partridge	23	2½		60	37	No	9	....do	21–35
344	Chelsea	Rufus S. Frost General Hospital	Agnes Alice du Brau	14	3		60	35	No	9	....do	22–35
345	Clinton	Clinton Hospital	Winifred Leslie Stevens	17	3	4	30	28	Yes	9	1 year H. S	21–35
346	Everett	Whidden Memorial Hospital	Hannah F. Searcy	9	3	2	22	10	Yes	9	C. S	21–35
347	Fall River	Union Hospital	Anna E. E. Rothrock, R. N	28	2½	11	80	40	Yes	9	8th grade	21
348	Fitchburg	Burbank Hospital	Freeman A. Tower, M. D	20	2¼	6	50	44	Yes	8½	H. S	21–33
349	Gloucester	Addison Gilbert Hospital	Deta H. Kinney, R. N	13	3	3	30	19	Yes	8½	C. S	21
350	Greenfield	Franklin County Hospital	Anna M. Sweeney	14	2	3	46	16	No	9–10	C. S	21
351	Haverhill	Hale Hospital*	Anne Charlotte Parker	14	3	5	35					
352	Holyoke	City Hospital	Laura S. Pratt	30	3	13	80	64	No	9	1 year H. S	21
353	....do	House of Providence Hospital	Mother Mary of Providence	24	3		70		No		C. S	21–35
354	Lawrence	Lawrence General Hospital	Martha P. Parker	33	3	10	100		Rarely	8	H. S	22
355	Lowell	Lowell Hospital Association	Cora J. Simpson	17	2	8	85	54	No	11	....do	21–30
356	....do	Lowell General Hospital	Sara A. Bowen, R. N	25	3	8	70	43	No	8½	....do	20

* Statistics of 1910.

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	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	MASSACHUSETTS—con.											
357	Lowell	St. John's Hospital	Sister Celine	21	3	3	65	45	No	9	1 year H. S.	22–35
358	Lynn	Lynn Hospital	Annie I. Fletcher, R. N	25	2	....	90	......	No	11	C. S.	21–35
359	do	Union Hospital	Julia Agnes Smith, R. N	19	3	6	35	30	Yes	9	H. S.	21–35
360	Malden	Malden Hospital	Charlotte M. Perry, R. N	27	3	4	80	43	No	9	1 year H. S.	21–35
361	Melrose	Melrose Hospital	Alma E. Grant	13	3	4	19	14	Yes	9	H. S.	21–35
362	do	New England Sanitarium	William E. Bliss, M. D	41	3	11	80	......	Yes	8	1 year H. S.	20
363	Montague City	Farren Memorial Hospital *	Sister Mary Immaculate Heart	8	2	2	50	......	......	......	......	......
364	Natick	Leonard Morse Hospital	N. J. van Cor	14	3	5	25	15	Yes	10	1 year H. S.	21
365	New Bedford	Emergency Hospital	Charles Arthur Derby, M. D	6	2	....	20	17	Yes	9½	H. S.	21
366	Newburyport	Anna Jacques Hospital	Brenda F. Mattice	15	2½	4	40	25	No	12	8th grade	23
367	do	Newburyport Homœopathic Hospital	Clara B. Peck, R. N	14	3	8	30	18	Yes	10	H. S.	21–30
368	Newton Lower Falls	Newton Hospital *	Mary M. Riddle	65	3	21	165	......	......	......	......	......
369	North Adams	North Adams Hospital *	Lillian A. Hanford, R. N	17	2½	9	65	......	......	......	......	......
370	Northampton	Dickinson Hospital	Mary Rose Raser	32	3	5	100	50	Yes	12	H. S.	21–30
371	Pittsfield	Henry W. Bishop, Third, Memorial Training School of the House of Mercy Hospital.	Mary M. Marcy, R. N	56	3	13	130	74	No	9½	C. S.	20
372	Plymouth	Jordan Hospital *	Emma Margaret Smith	9	2½	....	20	......	......	......	......	......
373	Quincy	City Hospital of Quincy *	B. M. Thayer	10	2	3	50	......	......	......	......	......
374	Salem	Salem Hospital	Caroline Brown Wilks	26	2 1/12	5	100	......	No	10	H. S.	21–35
375	Somerville	Somerville Hospital	Elizabeth C. Hogle	20	3	6	40	26	Yes	10½	1 year H. S.	22–35
376	South Framingham	Framingham Hospital	Ethel Humphrey, R. N	41	3	2	50	30	Yes	9½	H. S.	20–35
377	Springfield	Mercy Hospital	Mother Mary of Providence	29	3	7	150	7	No	10	1 year H. S.	21–30
378	do	Springfield Hospital	Jessie E. Colton	45	3	11	100	88	No	10	H. S.	20–23
379	do	Wesson Memorial Hospital	Hilda M. Boyd	34	3	11	60	80	Yes	9	do	21
380	Taunton	Taunton Hospital Co. Training School of the Morton Hospital.	Jennie S. Berry, R. N	12	3	4	25	16	No	9	do	21–35
381	do	Taunton Emergency Hospital *	Charles B. Learoyd, M. D	3	2	....	15	......	......	......	......	......
382	Waltham	Waltham Hospital	Beatrice de Veber	92	4	14	100	60	Yes	9	C. S.	19–35
383	Westfield	Noble Hospital	Nellie B. Hall	13	3	2	55	27	No	8½	do	21
384	Woburn	Choate Memorial Hospital	Grace B. Hanckley	8	2½	....	20	15	Yes	9	H. S.	20–35
385	Worcester	Worcester City Hospital	Louise Eleanor Keister	110	3	34	290	210	No	9	do	20–30
386	do	Hahnemann Hospital	Edith Robbins, R. N	12	3	1	25	14	Yes	10	do	21
387	do	Memorial Hospital	Donna G. Burgar	67	3	....	150	......	No	9	1 year H. S.	20–35
388	do	St. Vincent Hospital	Mother Mary Providence	26	3	8	110	85	No	10	H. S.	21–35

	MICHIGAN.											
389	Alma	Brainerd Hospital	I. N. Brainerd, M. D	5	2	3	15	4	Yes	12	C. S	18
390	Ann Arbor	University Hospital	Luella Bristol	75	3	19	300	240	No	10	H. S	20–32
391	do	University Homœopathic Hospital	D. W. Myers, M. D	40	3	9	100	85	Yes	10	do	21–35
392	do	Peterson's Hospital	Fantine Pemberton	10	4	3	9		No	9	do	19
393	Battle Creek	Battle Creek Sanitarium and Hospital *	Mrs. M. S. Foy	180	3	41	650					
394	do	Nichols Memorial Hospital	Maud Agnes Cline, R. N	14	3	6	46	28	Yes	9	H. S	18–21
395	Bay City	Mercy Hospital	Sister Mary Baptist	20	3	7	100	40	No	9½	do	21
396	Benton Harbor	Mercy Hospital	Millicent B. Northway, R. N	9	2½	4	27	12	No	8	1 year H. S	19–30
397	Big Rapids	Mercy Hospital	Sister Mary Philomena McDonald.	15	3	4	100	35	Yes	8	8th grade	20–30
398	Calumet	Calumet and Hecla Hospital *	Lisle Freligh	10	3	2	25					
399	Detroit	Boulevard Sanitarium	Miss Hulme, R. N	14	3				Yes	10		21–35
400	do	Grace Hospital *	C. P. van der Water	62	3	9	150					
401	do	M. Ferrand Training School of the Harper Hospital.		84	3	35	200	191		8	2 years H. S	22
402	do	Red Cross Hospital	Lottie Chambers	4	2	2	24	12	Yes	10	H. S	18–35
403	do	St. Mary's Hospital	Sister Lucina	50	3	15	200	15	No	10	C. S	20–30
404	do	Solvay General Hospital	Melvina M. Malhiot	14	3	4	50	24	Yes	9	8th grade	20–35
405	do	Woman's Hospital and Infants' Home	Miss S. Melville	21	2½	4	100	70	No	8	H. S	21–35
406	Grand Rapids	Butterworth Hospital	Elizabeth G. Flaws, R. N	45	3	14	100	70	No	9	1 year H. S	21
407	do	St. Mary's Hospital	Sister M. Thomas	20	3	4	45		Yes	10	H. S	21
408	do	Union Benevolent Association Hospital	Ida M. Barrett, R. N	40	3	10	70	59	No	9	do	21–35
409	Jackson	Jackson City Hospital	Margaret M. Moore	17	3	3	50	27	No	10	C. S	21
410	Kalamazoo	St. Caroline's Training School of the Borgess Hospital.*	Sister M. Raphael, M. D	12	3	5	125					
411	do	Bronson Hospital	Irene v. B. van Pelt	23	3	10	45	25	No	9½	1 year H. S	20–30
412	Lake Linden	Lake Superior General Hospital *	Zetta De Witt	8	3	2	30					
413	Lansing	Lansing Hospital *	Mabel L. Morgan	19	2½	8	25					
414	Laurium	Houghton County Training School of the Calumet Public Hospital.	Nettie L. Lester, R. N	8	3	2	25	10	Yes	12	H. S	21
415	Ludington	Paulina Stearns Hospital *	Nellie E. Dart	8	2½	4	16					
416	Manistee	Mercy Hospital *	Sister M. Camillus	14	3	3	75					
417	Marquette	St. Luke's Hospital	Mrs. Clara L. Mack	7	2	2	26		No	10	H. S	20
418	Mount Clemens	St. Joseph's Sanitarium *	Sister M. Bertha	14	5	3	100					
419	Muskegon	Hackley Hospital	Elizabeth A. Greener, R. N	20	3	9	60	37	No	9	2 years H. S	20
420	do	Mercy Hospital	Sister M. Joseph, R. N	47	3	3	42	25	Yes	10	H. S	18
421	Petoskey	Lockwood Hospital	Mary R. de Boer	4	2½	1	18	12	No	8½	2 years H. S	21
422	Port Huron	Port Huron Hospital	Elizabeth McClaskie	12	2	4	34	17	No	12	H. S	19
423	Saginaw	St. Mary's Hospital	Sisters of Charity	27	3	9	90	65	No	8		
424	do	Saginaw General Hospital	Ida E. Proctor		3	3	50	28	No	10	1 year H. S	20–35
425	do	Woman's Hospital *	Ida M. Tracy	12	2½	4	22					
426	Sault Ste. Marie	Sault Ste. Marie Hospital	Rosa Thomas	9	2		34	15	Yes	10	3 years H. S	20–30
427	Trimountain	Copper Range Hospital	Colina MacDonald	4	3	1	30	15	Yes	8	do	20
	MINNESOTA.											
428	Brainerd	Northern Pacific Benevolent Association Hospital.	Maude Isabel Manning	17	3	4	87	50	Yes	9½	2 years H. S	21
429	Crookston	Bethesda Hospital *	Deaconess Ovidia Olson	5	2	2	26					

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											Education.¹	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	MINNESOTA—contd.											
430	Duluth	St. Luke's Hospital *	Frances E. Smith, R. N.	30	3	7	100					
431	Fergus Falls	George B. Wright Memorial Hospital *	Eva M. F. Bratton, R. N.	14	2	3	27					
432	do	St. Luke's Hospital	Sister Marie Olson	10	2	3	38	25	Rarely	10	8th grade	20
433	Minneapolis	Abbott Hospital	Susan Holmes	12	2	4	30		No	10	H. S	21–31
434	do	Asbury Methodist Deaconess Hospital	Amy Allison	42	3	14	103	75		9	C. S	23–35
435	do	Maternity Hospital *	Martha G. Ripley, M. D	12	1	4	58					
436	do	Minneapolis City Hospital	Francis E. Morley	42	3	12	250	195	No	9	8th grade	21
437	do	Northwestern Hospital *	Grace Watson	41	3	6	90					
438	do	Norwegian Lutheran Deaconess Hospital.*	Sister Superior Lena Wilsón	20	3	4	90					
439	do	St. Barnabas' Hospital *	Grace H. Cameron, R. N.	35	3	10	90					
440	do	St. Mary's Hospital *	Sister Mildred	30	3	10	100					
441	do	Swedish Hospital	Elizabeth Peterson	47	3	11	150	110		8–9	1 year H. S	21
442	do	University of Minnesota	Louise M. Powell	16	3		52	48	No	8	H. S	20–35
443	Moorhead	Darrow Hospital	Daniel C. Darrow, M. D	5	3	1	30		Yes	10	C. S	20
444	Princeton	Northwestern Hospital	Frances S. Cooney	8	2	1	25	20	No	8	H. S	18
445	Red Wing	St. John's Hospital	Hannah Keller	12	3	4	50	27	Yes	9	8th grade	21–35
446	St. Paul	Bethesda Hospital and Deaconess Home *	Sister Elenora Slattengren	10	3	6	120					
447	do	City and County Hospital *	Mrs. Frances D. Campbell	85	3	14	600					
448	do	Cobb Hospital	Lydia H. Keller, R. N	8	3	2	18	14	No	8	8th grade	21
449	do	Luther Hospital	Sylvia Thorgrimsen, R. N	15	3	4	45	30	No	10		20–30
450	do	St. Joseph's Hospital	Sister Bernardine	80	3	24	150	108	No	8	H. S	19–35
451	do	St. Luke's Hospital	Margaret A. Crowl, R. N	44	3	11	100		No	10	do	21–35
452	Stillwater	Stillwater Hospital	Mrs. Harriet G. Knapp	7	2	3	25	12	Yes	9	do	18
453	Warren	Warren Hospital	Mrs. A. C. Greene	7	2	5	25	22	Rarely	10	C. S	21–34
454	Winona	Winona General Hospital	Elizabeth D. Davis, R. N	18	2	9	52	31	No	8	8th grade	20–30
	MISSISSIPPI.											
455	Alcorn	Alcorn Agricultural and Mechanical College.*	R. A. Gordon, M. D	12	3	2	12					
456	Gulfport	King's Daughters' Hospital *	Elizabeth A. Lealey	7	2		24					
457	Jackson	Jackson Sanitorium		8	2	2	40	15	Rarely	8	H. S	21
458	Natchez	Natchez Charity Hospital	Emma May Henning	22	3		180	120	Yes	10½	do	18–35
459	Vicksburg	Mississippi State Charity Hospital	Marian J. Parks	20	2⅛	11	190		Yes	9½	C. S	18–30
460	do	Vicksburg Infirmary *	M. L. Godbolt	12	2	5	30					

	MISSOURI.											
461	Columbia	Parker Memorial Hospital Training School for Nurses of the University of Missouri.	Dora B. Battson, R. N.	11	3	5	31	16	Yes	9	H. S.	20
462	Hannibal	Levering Hospital	Maude Landis	14	2½	6	35	20	Yes	9½	C. S.	20–35
463	Joplin	St. John's Hospital	Elizabeth Lyda O'Shea, R. N.	9	3		40		Rarely	10	8th grade	18
464	Kansas City	General Hospital	Harriet Leck, R. N.	40	3	18	350	300	No	8	1 year H. S.	19–32
465	do	German Hospital	Anne M. Casey	15	2½	4	65	33	No	8½		20–35
466	do	St. Joseph's Hospital	Reverend Mother Agnes Gonzaga Ryan.	50	3	12	110	95	No	9	8th grade	21–30
467	do	St. Luke's Hospital	L. Eleanor Keely	13	3	3	25	18	No	9	do	21–30
468	do	South Side Hospital*	K. McDonald	16	3	2	32					
469	do	University Hospital*	Fanny E. S. Smith	36	3	13	52					
470	do	Wesley Hospital	Myra Messinger	28	3	6	75	60	No	9	C. S.	22–30
471	St. Joseph	Deaconess Home and Hospital Association	Ethel Hastings	33	3	8	75	51	No	9	H. S.	20
472	do	St. Joseph's Hospital		21	3	6	101		Yes	10	C. S.	18–30
473	do	Bethesda Hospital	Edward W. Saunders, M. D.	22	3	10	70		Yes	8–12	do	19–32
474	St. Louis	Centenary Hospital*	Mary Eloise Welsh	28	3	5	75					
475	do	Christian Hospital*	Clara B. Sharpe	14	3	2	50					
476	do	Deaconess Hospital	Sister Magdalena Gerhold	8	3		90	85				
477	do	Jewish Hospital	Jessie R. Chisholm, R. N.	40	3	11	100	60	No	9	H. S.	21–35
478	do	Lutheran Hospital*	Ida Gerding	34	3	10	96					
479	do	Mayfield Sanitarium	W. H. Mayfield, M. D.	18	3	4	75	50	Yes	9	C. S.	19
480	do	Mission Baptist Sanitarium*	Francis S. Neal	42	3	9	150					
481	do	Provident Hospital*	A. A. Craddock, M. D.	4	3	1	16					
482	do	Rebekah Hospital*	Elizabeth M. Gill	25	3	8	70					
483	do	St. Anthony's Hospital	Henry Schwarz, M. D.	18	3		100		No	10	C. S.	17–27
484	do	St. John's Hospital	Sister Mary Aloysius	22	3	6	80	67	No	10	do	20–35
485	do	St. Louis Baptist Hospital Association	C. C. Morris, M. D.	18	3	3	75		Yes	10	8th grade	20–35
486	do	St. Louis City Hospital	M. Annie Gillis, R. N.	45	2	15	500	425	No	10	C. S.	21–33
487	do	St. Louis (Mullanphy) Training School of St. Louis Hospital Association.	Sister Gabriella Lynch	30	3	8	150		No	10	do	20–30
488	do	St. Luke's Hospital	Theodosia Manwell	41	3	13	92	56	No	9–9½	1 year H. S.	23–35
489	do	Washington University	Menia S. Tye	41	3	6	200	86–90	No	10	8th grade	18–30
	MONTANA.											
490	Butte	Murray Hospital	Della H. Folger, R. N.	22	2½	8	75	50	No	9	do	20–30
491	do	St. James' Hospital*	Sisters in charge	27	3	2	110					
492	Great Falls	Columbus Hospital	Sister Gaspard	21	3	8	202	80	Yes	8	1 year H. S.	18
493	do	Montana Deaconess Hospital	E. Augusta Ariss	18	3	8	68		Yes	9	H. S.	22
494	Helena	St. John's Hospital*	Sister Mary Coletta	20	2½	6	50					
495	Missoula	St. Patrick's Hospital	Sister Aldric	18	2½	3	160	50	No	10	8th grade	19–30
	NEBRASKA.											
496	Beatrice	Beatrice Sanitarium	C. P. Fall	4	2		20	8	Yes	9	H. S.	21
497	College View	Nebraska Sanitarium	Orville Rockwell, M. D.	22	3	3	75	50	Rarely	8	1 year H. S.	20
498	Fremont	Fremont Hospital*	Anna Douglas	18	2	5	40					
499	Kearney	Kearney Public Hospital*	Sylvia D. McKinney	10	2		24					
500	Lincoln	Dr. Benjamin F. Bailey Sanitorium Company	Anna M. Trippe, R. N.	26	2	11	54	50	No	10	8th grade	20–30

* Statistics of 1910.

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TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training.	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	NEBRASKA—contd.											
501	Lincoln	Nebraska Orthopædic Hospital*	Bessie M. Bixby, R. N.	11	2	5	65					
502	do	Sun Light Sanitarium*	Minnie van der Flute	15	2	4	42					
503	Omaha	Clarkson Hospital	Ellen Stewart	36	3	6	80	64	No	8½	H. S	21–30
504	do	Creighton Memorial, St. Joseph's Hospital*	Sister M. Hedwig	7	2		200					
505	do	Douglas County Hospital*	Mabel Christie	14	2	5	300					
506	do	Immanuel Hospital*	Deaconess Anna Flint	17	3	4	65					
507	do	Nebraska Methodist Episcopal Hospital and Deaconess Home School for the Training of Nurses.	Victoria Anderson	50	3		100	80	Rarely	9	H. S	21–35
508	do	Omaha General Hospital	Mary C. Wieck	24	3	6	80	45	No	10	C. S	20
509	do	Presbyterian Hospital*	J. E. Graham	22	3	4	50					
510	do	Swedish Mission Hospital	Hilda Christine Fleetwood, R. N.	16	3		45	20		8	C. S	21
511	do	Wise Memorial Hospital	Ida B. Hulette	34	3	12	65		No	8	H. S	20–35
512	South Omada	South Omaha Hospital	Leila Halverson	8	2	3	21	18	Yes	9½	8th grade	21
	NEW HAMPSHIRE.											
513	Claremont	Claremont General Hospital	Nellie A. Steere	11	2	7	25	18	Yes	9½	H. S	20–35
514	Concord	Margaret Pillsbury General Hospital	Irene Bowers	17	2⅔		60	30	Yes	9	1 year H. S	21–35
515	do	New Hampshire Memorial Hospital for Women and Children.	Rosanna O'Donoghue	10	2½		25	18	Yes	9	H. S	21–33
516	Dover	Wentworth Hospital	Grace P. Haskell, R. N	14	2½	4	40	25	No	9	do	21–35
517	Exeter	Exeter Cottage Hospital	Henrietta B. Chisholm, R. N	10	3		25	15	Yes	9	C. S	20
518	Hanover	Mary Hitchcock Memorial Hospital	Ida Frances Shepard, R. N	21	3	6	36	37	Rarely	10	1 year H. S	21–35
519	Keene	Elliot City Hospital*	Ella McCobb	23	2½	7	30					
520	Laconia	Laconia Hospital Association	Eva Wood, R. N	7	2	4	25		No	9	1 year H. S	21–35
521	Manchester	Elliot Hospital	Nellie M. Harding, R. N	18	3	4	40	21	No	10	H. S	21–35
522	do	Sacred Heart Hospital	Mother M. Regis	16	3	2	60	45	No	9	8th grade	21–30
523	Nashua	St. Joseph's Hospital	Sister M. C. Masselean	16	2¼	6	60	29	Rarely	9	do	20
524	do	Nashua Hospital Association	Elizabeth E. Heinemann, R.N.	14	2⅙		25	20	Yes	8		21
525	Whitefield	Morrison Hospital	M. S. McIntire	16	3		26	10	Yes	10	H. S	20
526	Woodsville	Woodsville Cottage Hospital	Eliza Wheaton	9	3	1	26	8	Yes	10½	do	20–22

	NEW JERSEY.											
527	Atlantic City	Atlantic City Hospital	Nannette S. Burkhard	10	3	7	150	80	Yes	12	do.	21
528	Bayonne	Bayonne City Hospital *	Della M. Fletcher, R. N	14	2	3	38					
529	Bridgeton	Bridgeton Hospital	Dorothy M. Ferree	8	2	3	30	12	Yes	12	C. S	20–35
530	Camden	Cooper Hospital	Frances Allen Worrall	35	3	7	125		No	10	1 year H. S	20–30
531	do	West Jersey Homœopathic Dispensary and Hospital Association.	C. E. MacNichols	13	3	3	40	35	Rarely	10	C. S	21–35
532	Elizabeth	Elizabeth General Hospital and Dispensary	Mary Reynolds Herrmann	39	3	9	130	75	Yes	9	do.	21–30
533	Englewood	Englewood Hospital	Eleanor E. Hamilton, R. N	18	3		56	30	Rarely	9	2 years H. S	21–23
534	Hackensack	Hackensack Hospital	Mary J. Stone	12	2		60	40	No	12	1 year H. S	21
535	Jersey City	Christ Hospital	Edith A. Hooper, R. N	35	3	12	102	90	No	9	C. S	22
536	Long Branch	Monmouth Memorial Hospital	Margaret J. Herries	30	2½	7	120	75	No	8	H. S	22
537	Montclair	Mountainside Hospital	Harriet T. Meiklejohn	27	3	8	86	45	Rarely	9	1 year H. S	20–35
538	Morristown	Morristown Memorial Hospital	Eliza McKnight	16	2½	5	74	54	No	9	do.	20
539	Newark	Homœopathic Hospital of Essex County, N. J	Nina R. Wilcox	23	2½	8	50	25	Rarely	10	2 years H. S	20–35
540	do	Newark Beth Israel Hospital	Hilda Fischer	26	3	7	90	75	No	10	C. S	18–30
541	do	Newark City Hospital	Mary Frances Mason	76	3	23	320	306	No	9	H. S	20–32
542	do	Newark German Hospital	Wilhelmine Kobbelöer	19	3	9	75	58	No	9	2 years H. S	21–35
543	do	Hospital of St. Barnabas	Augusta Hobart English, R.N	24	3	6	84	67	No	9	1 year H. S	22
544	do	St. James' Hospital	Elizabeth Conroy	21	3	8	75		No	11		21
545	Orange	Orange Memorial Hospital	Grace Elizabeth Stamp	35	3	13	128	83	No	9	C. S	21
546	Passaic	Passaic General Hospital	Margaret A. Wallace	18	3	7	70	50	No	12	1 year H. S	20–30
547	do	St. Mary's Hospital	Margaret S. Wilson	16	3	4	50	40	No	11	C. S	18
548	Paterson	Paterson General Hospital *	Eva A. Castle	36	3	10	125					
549	do	St. Joseph's Hospital	Anna M. Flanigan	40	3	11	150	100	Yes		H. S	21
550	Perth Amboy	Perth Amboy City Hospital	Beatrice M. Bamber	6	3		26	20	No	10½	C. S	20
551	Plainfield	Muhlenberg Hospital	Josephine Hughes, R. N	21	3	4	57	44	No	9	1 year H. S	20–35
552	Trenton	William McKinley Memorial Hospital	Laura M. Weber	18	3	6	75	50	No	9	do.	20–35
553	do	Mercer Hospital	Alice A. Gemmill	20	3	4	76	60	No	9½	C. S	20–35
554	do	St. Francis' Hospital	Loretta T. Harrity	30	3	6			No	11	H. S	18–35
555	Weehawken	North Hudson Hospital	Kate L. B. Tulley	14	2½	6	42	33	No	10	do.	20–26
	NEW MEXICO.											
556	Albuquerque	St. Joseph's Hospital	Sister Philip Neri	14	3	6	100	60	Yes			18–30
	NEW YORK.											
557	Albany	Albany Hospital	Susan C. Hearle	110	3	11	350	235	No	10	2 years H. S	21
558	do	Homœopathic Hospital of Albany, N. Y	Rose M. Heavren, R. N	29	3	5	90	64	No	9	1 year H. S	20–35
559	do	St. Peter's Hospital	Sister May Philomena	32	3	9	103	90	No	9	do.	21
560	Amsterdam	Amsterdam City Hospital	Helen M. Garrett, R. N	11	2½	2	50	19	No	9	do.	21
561	Auburn	Auburn City Hospital	Florence M. Grant	26	3	5	100	63	No	9	C. S	21
562	Binghamton	Binghamton City Hospital *	Margaret Bryden	20	3	6	64					
563	Brooklyn	Bethany Deaconess Hospital	Myrtha Binder	4	3		34	25	No	8	C. S	21–35
564	do	Brooklyn Eastern District Dispensary and Hospital.	Margaret T. Herlihy, R. N	12	2½	2	44	34	No	8	1 year H. S	21–30
565	do	Brooklyn Hospital	Mrs. Margaret L. Rogers, A. R. R. N.	44	3	9	196	124	No	9½	do.	20–30

* Statistics of 1910.

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TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	NEW YORK—contd.											
566	Brooklyn	Jewett Training School for Nurses of the Bushwick Hospital.	Jane S. Buchanan, R. N.	12	3	1	32	23	Yes	9	1 year H.S.	20–30
567	do	Cumberland Street Hospital	Rebecca Taylor, R. N.	23	2⅓	9	200	150	No	9	2 years H.S.	21–35
568	do	German Hospital	Ella B. Kurtz, R. N.	29	3	9	146	100	No	10	1 year H.S.	20
569	do	Jewish Hospital of Brooklyn	Anna M. Sabol	46	2½	11	250	213	No	8	do	19
570	do	King's County Hospital	Isabel Burrows, R. N.	65	2⅓	25	710	600	No	8	do	21–35
571	do	Long Island College Hospital	Mary H. Bodine, R. N.	55	3	14	275	208	No	9	do	21–31
572	do	Memorial Hospital for Women and Children*		9	2¼	2						
573	do	Methodist Episcopal Hospital	A. S. Kavanagh, D. D.	80	2½	24	225	175	Rarely	10	1 year H.S.	21–35
574	do	New York State School for Training Nurses of the Prospect Heights Hospital and Brooklyn Maternity.	Gertrude M. Gibson, R. N.	20	2⅓	9	50	45	No	8½	do	21–35
575	do	St. John's Hospital	Helen Lawrie Smith, R. N.	31	3	10	80	56	No	9	do	21
576	do	St. John's Long Island City Hospital	Caroline Marques, R. N.	36	2½	7	225	150	No	9	do	20–30
577	do	St. Mary's General Hospital	M. Lavinia Copeland, R. N.	53	3	25	270	200	Yes	10	do	20–33
578	do	Williamsburgh Hospital	Stella Fuchs, R. N.	20	2¼	3	65		No	10	do	21–35
579	Buffalo	Buffalo General Hospital	Miss R. Morley, R. N.	87	3	20	365	250	No	12	do	21–35
580	do	Buffalo Hospital of Sisters of Charity	Sister Vincent	60	3	21	250	141	No	10	do	20–30
581	do	Buffalo German Hospital	Cornelia L. Sieck	25	3	11	74	64	No	9	do	21
582	do	Buffalo Homœopathic Hospital	Anna L. Alline, R. N.	33	3	3	117		No	8	do	20
583	do	Buffalo Woman's Hospital	Mrs. Harriet D. Stone	16	3	2	35	29	No	9	do	20–35
584	do	Children's Hospital	Mrs. Evangeline Nye	30	3	9	85	61	No	9	2 years H.S.	20–30
585	do	City Hospital*	Agnes R. Dottenveich	5	2⅓	2	25					
586	do	Emergency Hospital of Sisters of Charity and St. Mary's Maternity Hospital.	Sister Louise May	21	3	2	80	60	No	8, 9	1 year H.S.	20–30
587	do	Erie County Hospital	Nellie Davis	47	3	16	450	425	No	8	do	20
588	do	German Hospital	Ada Dean	13	3	1	72	51	No	10	do	21–35
589	do	La Fayette General Hospital and State Hospital	Kate Beator	6	3	1	35	30	Yes	8	do	20–35
590	do	Lexington Heights Hospital	Alta E. Phillips	10	3	3	24	8	No	9	H. S.	23
591	Canandaigua	Canandaigua Hospital of Physicians and Surgeons.	E. Luella Morrison, R. N.	10	3	5	50	18	Yes	9	1 year H.S.	21
592	do	Frederick Ferris Thompson Hospital	R. Elizabeth Bidmead, R. N.	17	2½	6	55	34	No	9	do	19–30

593	Clifton Springs	Clifton Springs Sanitarium	Edna L. Boyce, R. N	45	3	17	254	......	Yes	9	....do	21–35
594	Cohoes	Cohoes Hospital	Mrs. Elizabeth F. Alvis	14	3	5	60	30	No	10	....do	25
595	Cooperstown	Thanksgiving Hospital	Deborah M. Caldwell, R. N	8	2	4	50	20	No	9	....do	19
596	Corning	Corning Hospital	Josephine E. Thurlow	11	2½	....	27	16	No	9–10	....do	20–34
597	Cortland	Cortland County Hospital	Elizabeth MacDill	....	2	5	54	......	No	9	....do	21–35
598	Dansville	Jackson Sanatorium	Alma McCumber, R. N	16	3	6	175	......	No	9	....do	21–34
599	Dunkirk	Brooks Memorial Hospital	Maude E. Hagar, R. N	10	3	2	40	20	No	9	....do	20
600	Elmira	Arnot-Ogden Memorial Hospital	Grace R. D. Kinney	18	2	7	80	45	No	9	H.S	20–35
601	Geneva	Geneva City Hospital	L. Alice Chambers, R. N	11	2½	7	53	16	No	9	....do	21–35
602	Glens Falls	Glens Falls Hospital	G. Leta Card, R. N	17	3	1	75	35	No	9	1 year H.S	21–32
603	Gloversville	Nathan Littauer Hospital	Ida M. Root, R. N	11	3	1	50	29	No	9	....do	21–25
604	Hudson	Hudson City Hospital	Ruth Gardner Clark, R. N	12	2½	8	32	20	Yes	9	....do	20–35
605	Jamestown	Woman's Christian Association Hospital	Nettie A. Romans	21	3	7	65	46	Yes	9	....do	21–35
606	Kingston	City of Kingston Hospital	Mary Amelia Cecelia Moore, R. N.	8	3	2	30	......	No	10	C.S	20–25
607	Little Falls	Little Falls Hospital	Mary E. Morrell, R. N	9	2½	1	25	13	No	10	1 year H.S	21
608	Lockport	Lockport City Hospital	Vera de Mille Eaton, R. N	11	3	....	25	19	Yes	9	....do	18–35
609	Middletown	Thrall Hospital	Harriett Southworth, R. N	12	3	4	43	28	Rarely	9	....do	21–35
610	Mineola	Nassau Hospital	Adah H. Adams	24	3	5	70	50	No	11	H.S	18–35
611	Montour Falls	Bethesda Sanitarium*	Loretta L. Clawson	6	2	....	35	......	......	......	......	......
612	Mount Vernon	Mount Vernon Hospital	Mary A. Land, R. N	14	3	4	32	24	No	9	1 year H.S	20–35
613	Newburgh	St. Luke's Hospital	Sara S. Henry, R. N	24	2⅔	9	75	45	No	10	....do	20
614	New York	Bellevue and Allied Hospitals	Clara D. Noyes, R. N	144	2¼	46	1,223	1,113	No	10	....do	21
615	....do	Beth Israel Hospital	Sarah Carr Sharp	33	2	18	134	120	No	9	C.S	21–33
616	....do	Flower Hospital	Harriette E. Wildey	40	3	13	140	120	No	9	1 year H.S	21
617	New York (Flushing)	Flushing Hospital and Dispensary	Florence L. Wetmore, R. N	20	3	4	60	......	No	10	....do	19–35
618	New York	French Benevolent Society Hospital	Minnie Hinks Jordan, R. N	24	2¼	9	115	75	No	9	2 years H. S	21–33
619	....do	German Hospital and Dispensary	Anna L. Schulze, R. N	23	3	21	256	239	No	11	1 year H. S	21–35
620	....do	Hahnemann Hospital	Alice I. Twitchell, R. N	35	3	9	100	66	No	9	....do	20–30
621	....do	Italian Hospital of the Borough of Manhattan	Anna Marion Beadle, R. N	16	2	5	48	41	No	9	....do	19–35
622	New York (Jamaica)	Jamaica Hospital	Eldora H. Ward, R. N	9	3	....	55	35	No	8½	....do	19
623	New York	Laura Franklin Free Hospital for Children	Frances L. Lurkins, R. N	20	2½	8	60	67	No	10	....do	18–32
624	....do	Lebanon Hospital	Josephine C. Schreyer, R. N	54	3	16	192	165	No	9	....do	21–35
625	....do	Lincoln Hospital and Home	Alice E. Pierson, R. N	48	3	10	425	379	No	11	....do	21–35
626	....do	Lozier Memorial Training School for Nurses of the New York Medical College and Hospital for Women.	Juel A. Dillon, R. N	25	3	....	50	45	No	9	....do	21
627	....do	New York City Training School for Nurses of the City, Maternity, and Gouverneur Hospitals.	Jane M. Pindell, R. N	90	2⅙	42	935	852	No	10	....do	21–35
628	....do	Metropolitan Hospital	Agnes S. Ward, R. N	78	3	31	1,545	1,480	No	9–10	....do	20–35
629	....do	Misericordia Hospital	Sister Marie, R. N	25	2½	....	300	150	No	8–9	....do	20
630	....do	Mount Sinai Hospital	Anne T. Van Kirk	165	3	49	500	430	No	9½	C. S	21
631	....do	New York Foundling Hospital*	Sister Teresa Vincent	40	2	18	160	......	......	......	......	......
632	....do	New York Hospital	Adeline Henderson, R. N	92	2	35	250	225	No	8½	C. S	23–33
633	....do	New York Infirmary for Women and Children	Sarah C. Olmsted, R. N	27	2½	12	98	......	No	9	....do	22–33
634	....do	Margaret Fahnestock School for the Training of Nurses of the New York Post-Graduate Medical School and Hospital.	Susan E. Emmott, R. N	100	3	29	225	180	No	10	1 year H. S	23–33

* Statistics of 1910.

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	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	NEW YORK—continued.											
635	New York	Presbyterian Hospital	Anna C. Maxwell	113	3	25	233	214	No	8½	H. S	22–35
636	do	Roosevelt Hospital	Isabel D. Richmond	63	2½	30	254	190	No	8½	2 years H. S	23–33
637	do	St. Luke's Hospital	Mrs. C. E. Bath	125	3	29	310	290	No	9	H. S	22–33
638	do	St. Mark's Hospital of New York City	Mrs. L. Graham Williams, R.N.	31	5	3	70	70	Yes	8½	1 year H. S	20–30
639	do	St. Mary's Free Hospital for Children	Sister Esther Clement	24	2½	12	122	90	No	9	do	19–23
640	do	St. Vincent's Hospital	Catherine A. Sanborn, R. N.	92	3	24	382	322	No	10	do	21–33
641	New York (Borough of Richmond).	do	Julia A. Sheehan, R. N.	23	3	7	72	60	No	9	do	19–30
642	New York (Tompkinsville).	S. R. Smith Infirmary	M. R. Pratt, M. D	40	3	18	150	100	No	9	H. S	21
643	New York	Sydenham Post-Graduate Course Hospital	Olga Sandell, R. N	33	3	9	85	68	No	9	1 year H. S	21–35
644	do	Washington Heights Hospital	Marcia E. Martyn	10	2½	1	35	20	No	9	do	19–30
645	do	Woman's Infirmary and Maternity Home.*	Mahlon E. Swartz, M. D	13	2	10	6					
646	do	Yorkville Hospital *	Margaret E. McCormack	4	2		28					
647	Niagara Falls	Niagara Falls Memorial Hospital *	Irene M. Johnson	30	3	6	90					
648	Ogdensburg	Mary Immaculate School for the Training of Nurses of the City Hospital.	Sister Mary Florence, R. N.	20	3	4	65	60	No	10	1 year H. S	18–25
649	Olean	Olean General Hospital	Caroline M. Wilson, R. N.	7	3	2	15	12	No	10	H. S	20–30
650	Oneida	Broad Street Hospital	Alice A. Dougall, R. N.	6	3	2	30	13	No	9	1 year H. S	18
651	Oneonta	Amelia Osborn Memorial Hospital	Eva Caddy	7	2½	1	25	15	No	10	do	20–35
652	Ossining	Ossining Hospital	Elizabeth Lounsbery	9	2	3	30		Yes	10		20–30
653	Oswego	Oswego Hospital	Mary MacPhee, R. N	18	3	1	60	33	No	9	1 year H. S	20
654	Peekskill	Peekskill Hospital	Marion D. Lingenfelter, R. N.	10	2½	3	50		Yes	9	do	19–30
655	Poughkeepsie	Vassar Brothers' Hospital	Claribel A. Wheeler, R. N.	24	3	3	65	50	No	7	do	20
656	Rochester	Graham Highland Park Sanatorium and Maternity Hospital.	C. T. Graham, M. E., M. D	11	3	2	45	30	No	10	do	18
657	do	Hahnemann Hospital of Rochester	Mary B. Curtice	35	3	8	115	85	No	10	do	18–30
658	do	Lee Private Hospital	Laura F. Lewis, R. N.	18	3		51	46	Yes	10	do	
659	do	Rochester General Hospital	Mary L. Keith, R. N	61	3	26	140	103	No	8½	do	20–30
660	do	Rochester Homœopathic Hospital	Jessica S. Heal, R. N	54	3	12	144	105	No	8½	do	20
661	do	St. Mary's Hospital	Sister Clementine	20	3	8	200	125	No	10	do	21
662	Rome	Rome Hospital	Arvilla E. Everingham, R. N.	12	3	3	30	16	Yes	8–9	do	20
663	Saratoga Springs	Saratoga Hospital	Catherine Lawrence	13	3	5	50	22	No	10	do	19–35

664	Schenectady	Ellis Hospital—Schenectady Hospital Association.	Esther T. Jackson, R. N.		3	8	100	59	No	9	do	20
665	do	Schenectady Physicians' Hospital	Julia E. Littlefield, R. N.	10	3	9	26	21	No	9	do	21
666	Syracuse	Hospital of the Good Shepherd	Edith W. Seymour, R. N.	71	3	26	186	114	No	8	do	18–35
667	do	St. Joseph's Hospital	Esther G. McCarty	30	3½	9	130		Yes	9	H. S.	21–30
668	do	Syracuse Homœopathic Hospital	Louise R. Sherwood, R. N.	16	3	4	44	36	No	10	1 year H. S.	21
669	do	Syracuse Hospital for Women and Children	Laura A. Slee	38	3	7	162	86	No	9	do	21
670	Troy	Samaritan Hospital	Louise F. Arnold, R. N.	36	3	8	125	100	No	9	1 year H. S.	20–25
671	do	Troy Hospital	Sister Annie Keenan	37	3	14	115	100	No	10	do	20
672	Utica	Faxton Hospital	Florence Struthers, R. N.	27	3	8	60	35	No	9	do	20–33
673	do	St. Luke's Home and Hospital	Ruth Pentland, R. N.	30	3	10	80	65	No	10	C. S.	20
674	do	Utica General Hospital	Anna O'Neil	16	3	6	75	50	No	9	1 year H. S.	21
675	do	Utica Homœopathic Hospital	Caroline Evans, R. N.	10	3	2	20	12	No	9	H. S.	20
676	Watertown	Home of the Good Samaritan *	Mrs. Lucy R. Joy, R. N.	16	2½	7	50					
677	do	St. Joachim's Hospital	Sister M. Stella Maris, R. N.	20	2½	7	60	35	No	9	1 year H. S.	
678	White Plains	White Plains Hospital Association	Ida Nudell, R. N.	15	3	6	50	30	No	12	do	21
679	Yonkers	Cochran Training School for Nurses of the St. John's Riverside Hospital.	M. E. Wood, R. N.	36	3	11	78	59	No	9	do	21–35
680	do	St. Joseph's Hospital *	Letitia E. Shaughnessy, R. N.	22	2½	10	75					
681	do	Yonkers Homœopathic Hospital	Marion McLimont	17	3	6	70	20	No	12	1 year H. S.	18
	NORTH CAROLINA.											
682	Asheville	Dr. Carroll's Sanitarium	Miss S. A. Wilson	17	3	3	50	35	Yes	9½	do	19
683	do	Asheville Mission Hospital *	Mary Perkins Laxton	24	3	4	60					
684	Biltmore	Clarence Barker Memorial Hospital and Dispensary.	M. H. Trist	8	3		16	10	Rarely	10	C. S.	21
685	Caroleen	Caroleen Hospital	Amanda T. Harrill	3	3		15	5	No	10	H. S.	20–30
686	Charlotte	Good Samaritan Hospital	C. M. Strong, M. D.	5	3	3	16	12				
687	do	Presbyterian Hospital *	Ella H. McNichols	20	3	4	45					
688	do	St. Peter's Hospital*	Mary A. Cordner	19	3		50					
689	Durham	Lincoln Hospital	A. M. Moore, M. D.	10	2		40	20	Yes	8½	C. S.	20
690	Greensboro	St. Leo's Hospital	Sisters of Charity	25	3	6	100	60	Yes	12	H. S.	20–30
691	Laurinburg	James Sanatorium	Mrs. L. D. James, R. N.	8	3	1	60	15	Yes	12	do	21
692	Lincolnton	Lincoln Hospital *	Radiant F. Sistare	4	3	3	12					
693	Lumberton	Thompson Hospital *	Mrs. Effie R. Hatfeld	6	3	1	15					
694	Morganton	Grace Hospital	Maria Purdon Allen, R. N.	4	3		22	9		8½		18
695	Raleigh	Rex Hospital		15	3	4	48		Yes	10	H. S.	21
696	do	St. Agnes' Hospital *	Dr. Catharine P. Hayden	13	2	4	52					
697	Salisbury	Whitehead-Stokes Sanatorium *	Ella Price Smith, R. N.	20	3½	5	50					
698	Sanford	Central Carolina Hospital	Mabel A. Wallace	6	3	1	17		Yes	10	C. S.	18
699	Statesville	Statesville Nurses' Training School Company of the Long's Private Sanatorium.*	Anne Ferguson	8	3	1	25					
700	Tarboro	Pittman Hospital	Mattie T. Shackleford	4	3		30		Yes	9	C. S.	20–30
701	Washington	Washington Hospital	Martha Jean MacDonald	12	3	4	30	18	Yes	10	C. S.	20
702	do	S. R. Fowle Memorial Hospital *	Isabella Patterson	8	3	1	30					
703	West Durham	Watts Hospital	Mary L. Wyche	30	3	5	105		Yes		H. S.	20
704	Wilmington	James Walker Memorial Hospital	Mildred Diana Hatch, R. N.	21	3	7	75	47	No	9	1 year H. S.	21–30
705	Wilson	Wilson Sanatorium *	Ada E. Allen	10	3	3	26					
706	Winston-Salem	Twin City Hospital *	L. Eugenia Henderson, R. N.	11	3	3	30					

* Statistics of 1910.

[1] Abbreviations used: C. S.—Common school. H. S.—High school.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.¹	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	NORTH DAKOTA.											
707	Fargo	St. John's Hospital *	Sister Madeleine	23	3	6	72	......	......	......	......	......
708	Grand Forks	Grand Forks Deaconess Hospital *		11	3	4	55	......	......	......	......	......
709	....do	St. Michael's Hospital *	Sister Leocardia	16	3	1	60	......	......	......	......	......
710	Jamestown	City Hospital *	Maude H. Sides	5	2	3	15	......	......	......	......	......
711	Northwood	Northwood Deaconess Hospital	Deaconess Mildred Olson	10	2	5	30	13	Yes	10	C. S	18–30
	OHIO.											
712	Akron	City Hospital of Akron	Marie Anna Lawson	25	3	5	80	76	No	9	H. S	21–35
713	Alliance	Alliance City Hospital *	Sara B. Franklin	8	3	2	18	......	......	......	......	......
714	Ashtabula	Ashtabula General Hospital	Agnes Jane Stark, R. N	13	3	2	38	......	Rarely	9	H. S	20–34
715	Canton	Aultman Memorial Hospital	Alice N. Hemmingway	14	3	4	60	......	Yes	12	1 year H. S	21–30
716	Cincinnati	Bethesda Hospital	Louise Golder	24	2,3	9	85	61	No	10	C. S	20
717	....do	The Christ Hospital	Alice Thatcher	54	3	14	120	85	No	8	H. S	20–30
718	....do	Cincinnati Hospital	Olive Fisher	72	3	26	500	......	No	9	....do	21–30
719	....do	Episcopal Hospital for Children	D. Schenck	10	1½	5	66	50	Yes	10	C. S	18–30
720	....do	Good Samaritan Hospital *	Sister Mary Cyril	26	3	1	78	......	......	......	......	......
721	....do	Jewish Hospital	Mary H. Greenwood	33	3	8	125	80	No	9	H. S	21
722	....do	Ohio Hospital for Women and Children	Laura Ball	3	3	1	19	8	Yes	9½	....do	21
723	....do	Ohio Maternity Hospital Training School of the German Deaconess Hospital.	Sister Albertine	10	2	2	25	......	Yes	10	8th grade	20–35
724	Cleveland	Canfield-White Hospital	Florence Nightingale Mailleue.	8	2½	3	20	10	Rarely	10	H. S	22–32
725	....do	Cleveland City Hospital *	Emily M. Gent, R. N	50	3	13	350	......	......	......	......	......
726	....do	Cleveland Training School for Nurses of the Huron Road Hospital.	Annie E. Irving	29	2⅓	5	112	......	No	10	H. S	21
727	....do	German Hospital	Marian Czarina Mason, R. N	11	3	3	50	35	No	10	8th grade	21–40
728	....do	Lakeside Hospital	Mary Alexandria Samuel	90	3	30	271	212	No	8	H. S	21–35
729	....do	Lutheran Hospital	Elise Mannel, R. N	8	2	3	35	20	No	10	C. S	21
730	....do	Maternity Hospital	Mrs. Anna S. Center	10	1	9	16	......	No	12	H. S	25
731	....do	Mt. Sinai Hospital	Sophia M. Folsom	8	2	1	30	25	No	10	C. S	21
732	....do	St. Clair Hospital *	Miss B. Secord	18	3	5	65	......	......	......	......	......
733	....do	St. Luke's Hospital	Frederika K. Gaiser	40	3	11	90	70	No	9	1 year H. S	21–35
734	....do	St. Vincent's Charity Hospital	Sister M. Marcelline	48	3	16	140	130	No	10	2 years H. S	20–33
735	Columbus	Grant Hospital	Rachel Bourke	76	3	12	150	150	No	8½	H. S	21–35

736	.....do	Hawkes Hospital of Mt. Carmel	Sister Mary Wilfrid	61	3	21	250	100	Yes	11	.....do	20–30
737	.....do	Lawrence Hospital	Louise Vollmer	8	2¾	2	20	15	Yes	8	.....do	20–28
738	.....do	Mercy Hospital	Mrs. Sue Patterson	8	2½	....	25	15	No	12	C. S.	21–35
739	.....do	Protestant Hospital Association	Mrs. H. A. Fenzel	42	2	21	100	70	No	12	H. S.	21
740	Dayton	Miami Valley Hospital	Florence A. Bishop	44	3	14	150	110	No	......	.....do	21–35
741	East Liverpool	East Liverpool City Hospital *	Nell Florence Parrish	14	3	8	50	......	......	......	......	......
742	Findlay	Home and Hospital	Charlotte Kerans	11	2	2	40	18	Yes	10	H. S.	21–35
743	Hamilton	Mercy Hospital	Sister Mary Raymond	16	3	....	120	......	No	......	C. S.	20–30
744	Kenton	St. Anthony Training School for Nurses of the Antonio Hospital.	Sister Rose Francis, R. N	6	3	....	25	......	......	......	......	......
745	Lima	Lima Hospital	Margaret B. Mateer	19	2½	6	68	34	No	12	C. S.	20–30
746	Lorain	St. Joseph's Hospital	Sister M. Chrysostom	20	3	....	85	50	Rarely	......	......	20
747	Marion	Ohio Sanatorium Company	Myrta A. Harris	12	3	....	70	45	Yes	10	H. S.	18–30
748	Newark	Newark City Hospital	Ruby Castle Wilson	7	2	....	20	12	No	8½	.....do	20
749	Painesville	Painesville Hospital	Blanche Stair, R. N	10	2	3	25	15	Yes	8	C. S.	21–32
750	Ravenna	White Hospital	Wilford W. White, M. D	7	3	2	20	12	No	8	H. S.	19–25
751	Sandusky	Providence Hospital *	Sister Mary Aurelia	9	3	....	29	......	......	......	......	......
752	Springfield	Springfield City Hospital	Mary A. Jamieson	22	10	3	100	55	No	8½	H. S.	21–35
753	Steubenville	Gill Hospital*	Hanna Driscoll	2	3	....	25	......	......	......	......	......
754	Toledo	Lucas County Infirmary Hospital	A. J. Hammer, M. D	7	2	5	75	70	No	9	C. S.	21
755	.....do	Maternity Hospital	Lucy A. Lanman	5	1	....	50	32	No	8	H. S.	23–35
756	.....do	Robinwood Hospital	Mabel Morrison	20	3	4	100	35	Rarely	10	.....do	20–30
757	.....do	St. Vincent's Hospital	Sister St. Simon	60	2½	22	175	150	No	9	C. S.	21–30
758	.....do	Toledo Hospital	Margaret M. Wallace, R. N	35	2½	5	150	85	No	10	H. S.	21
759	Youngstown	Mahoning Valley Hospital *	Sister Augustine	6	3	2	40	......	......	......	......	......
760	.....do	Youngstown Hospital	Cecil L. Schreyer, R. N	....	2½	13	136	116	No	9	1 year H. S.	20–30
761	Zanesville	Bethesda Hospital *	Clara B. Chesbrough	9	2	1	33	......	......	......	......	......
	OKLAHOMA.											
762	Guthrie	Oklahoma Methodist Hospital	Renette Hill	10	3	4	24	15	Yes	9	H. S.	20
763	McAlester	All Saints Hospital	James C. Johnston, M. D	10	3	....	75	35	Yes	9	C. S.	19
764	Mangum	Border Hospital *	Mary Beaumont	4	2	....	12	......	......	......	......	......
765	Shawnee	Shawnee General Hospital	Annie T. Smith	12	2	2	50	15	No	9	8th grade	20
766	Tulsa	Physicians and Surgeons Hospital	Miss McCarty	4	2	....	25	15	No	12	C. S.	20
767	.....do	Tulsa Hospital *	Miss H. C. C. Ziegeler	12	2½	....	50	......	......	......	......	......
	OREGON.											
768	Portland	Good Samaritan Hospital	Rebecca Maybury Jolly	90	2½	26	250	......	No	9	1 year H. S.	20–33
769	.....do	St. Vincent's Hospital	Sister M. Mathilda	71	3	16	375	......	......	10	C. S.	20–30
770	Salem	Salem Hospital	Lillian McNary	12	2	4	50	......	......	9	H. S.	22
771	The Dalles	The Dalles Hospital	Lydia Bottemiller	13	2½	4	75	40	Yes	9	C. S.	20–30
	PENNSYLVANIA.											
772	Allentown	Allentown Hospital	Clara V. Haring	31	2½	9	100	81	No	10½	H. S.	21–35
773	Austin	North Pennsylvania General Hospital	M. Elizabeth Dorchester	5	2	1	27	13	Yes	10	C. S.	21
774	Bellefonte	Bellefonte Hospital	Miss L. S. Bettz	10	3	2	38	26	Yes	10	H. S.	21
775	Bellevue	Suburban General Hospital	Florence A. Blanchfield	6	2½	2	19	15	No	9	C. S.	18–30
776	Bloomsburg	Joseph Ratti Hospital	Sister Mary Pierre Desmond	6	2	4	16	......	No	10	H. S.	18

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											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	PENNSYLVANIA—contd.											
777	Braddock	Braddock General Hospital	Ida May Gailey, R. N.	22	3	6	65	45	No	8½–9	C. S.	20–30
778	Bradford	Bradford Hospital	Eliza B. Callender, R. N	30	3	8	100	68	No	10	do	20
779	Bryn Mawr	Bryn Mawr Hospital	Elizabeth Boone Echman	19	3	3	65	35	No	9	1 year, H. S	21–33
780	Butler	Butler County General Hospital *	Imogene Palmer	13	3	5	50	......	......	......	......	......
781	Carbondale	Carbondale Emergency Hospital *	Alice Hart	14	2	6	42	......	......	......	......	......
782	Chambersburg	Chambersburg Hospital	Miss M. N. Gable	10	3	1	38	24	Rarely	8–10	C. S.	18–35
783	Chester	Chester Hospital	Mary L. Harper	25	3	5	125	65	No	12	H. S	21
784	do	J. Lewis Crozer Home for Incurables and Homœopathic Hospital.	Annie O'Bryan	14	3	......	50	......	No	......	......	......
785	Clearfield	Clearfield Hospital *	Jessie M. Durstine	7	3	3	34	......	......	......	......	......
786	Columbia	Columbia Hospital	Lillian F. Wardell, R. N	8	3	2	36	20	Yes	10	H. S	19
787	Corry	Corry Hospital	Ida R. Falconer	12	3	4	50	19	Yes	9	1 year, H. S	21
788	Du Bois	Du Bois Hospital	......	7	2½	1	22	......	No	10	C. S.	19–25
789	Easton	Easton Hospital	Sister Marie Sowa	15	3	5	100	68	Yes	8–9	H. S	21
790	Erie	Hamot Hospital	M. Ella Wickersham	23	3	4	100	61	No	10	......	21–35
791	do	St. Vincent's Hospital	Sister M. Anita Pariseau	31	3	10	100	67	No	10	8th grade	20–30
792	Fountain Springs	State Hospital for Injured Persons of the Anthracite Coal Regions.	J. C. Biddle, M. D	29	3	9	......	......	Rarely	10	H. S	19–35
793	Greensburg	Westmoreland Hospital	Estelle V. Fost	15	3	......	74	51	No	12	8th grade	20–30
794	Harrisburg	Harrisburg Hospital	Clara M. Swank	23	3	4	100	80	No	9	do	20
795	Hazleton	Hazleton State Hospital	Laura J. Allen	16	2½	......	103	......	No	9	H. S	21–35
796	Johnstown	Conemaugh Valley Memorial Hospital*	Jessie L. Greene	32	3	11	120	......	......	......	......	......
797	Kane	Kane Summit Hospital	Mary J. Hays, M. D	18	3	1	56	23	Yes	10	8th grade	18–35
798	Lancaster	Lancaster General Hospital	Clara Belle Schmehl, R. N	33	3	9	125	70	Yes	10	H. S	21–35
799	do	St. Joseph's Hospital	M. Agnes Lowell, R. N	20	3	4	110	60	Yes	......	do	21
800	Lebanon	Good Samaritan Hospital	Elizabeth Hanson	7	3	......	35	18	No	9	1 year, H. S	20–35
801	Lock Haven	Lock Haven Hospital *	Cornelia W. Happersett	18	3	1	60	......	......	......	......	......
802	McKeesport	McKeesport Hospital	Katherine Dempster, R. N	34	3	11	150	125	No	9	H. S	18
803	McKees Rocks	Ohio Valley General Hospital*	Harriet M. Noble	10	3	2	60	......	......	......	......	......
804	Meadville	Meadville City Hospital	Lydia A. Whiton	16	3	6	60	29	No	9	C. S.	19–35
805	do	Spencer Hospital	Sister Emilena Ellis	10	2½	1	40	32	No	8	do	20
806	Mercer	Cottage State Hospital	Elizabeth L. Shea	4	2	......	37	13	No	9	do	18–30
807	Mount Pleasant	Mount Pleasant Memorial Hospital *	Zulu Henneberger	12	3	3	52	......	......	......	......	......

808	New Brighton	Beaver Valley General Hospital	Austa Whitmyre	14	3	2	50	30	No	9		21–30
809	New Castle	Shenango Valley Hospital	Lydia MacKinney	21	3	5	100	50	No	9½	H. S.	18–30
810	Norristown	Charity Hospital	Miss P. Schneider	12	3	4	56	32	No	12	8th grade	20–35
811	Oil City	Oil City General Hospital *	Emma J. Keating, R. N.	20	3	8	60					
812	Philadelphia	Children's Hospital of Philadelphia	Miss F. Virginia Ludekens	30	2½	6	75	60	No	9	8th grade	18–25
813	do	Children's Homœopathic Hospital	Alice Brownell	20	2½		130	63	No	10	C. S.	20
814	Philadelphia (Frankford).	Frankford Hospital	Anna C. Garrett	15	3	6	65	50	No	9½	H. S.	20–35
815	Philadelphia	Frederick Douglass Memorial Hospital	Elsie M. Browne	12	2½	4	65	30	Yes	9	do	21–35
816	do	German Hospital of Philadelphia	Sister Marie Kolneke	42	3	11	220	180	No			21
817	Philadelphia (Germantown).	Germantown Dispensary and Hospital	Mrs. R. F. W Crossland	36	3	8	150	100	No	9	C. S.	21
818	Philadelphia	Gynecean Hospital	Edith Ritter	17	2	8	45	28	No	9	do	19–30
819	do	Hahnemann Hospital of Philadelphia	Eva J. Hood	78	3	26	300	150	No	11	H. S.	20–32
820	do	Henry Phipps Institute	A. K. Sutton	10	2	8	26	24	No	9	C. S.	21–33
821	do	Hospital of Women's Homœopathic Association		21	3	5	125	40	Yes	10	do	20–40
822	do	Howard Hospital	Anna E. Barrett	22	2	6	80	50	No		H. S.	21–35
823	do	Jefferson Medical College Hospital	Anna E. Laughlin	94	3	41	300	215	No	10	do	21–35
824	do	Jewish Hospital of Philadelphia	Susan C. Francis	53	3	16	180	140	No	9	C. S.	20–35
825	do	Kensington Hospital for Women	Harriet E. Parker, R. N.	20	2½	7	50	35	No	7–8	H. S.	21–35
826	do	Medico-Chirurgical Hospital	Elizabeth V. Lobb, R. N.	70	3	18	210	140	No	9	do	21
827	do	Methodist Episcopal Hospital	Alice M. Garrett	40	3	11	125	83	No	9	C. S.	21–35
828	do	Mt. Sinai Hospital	May Cook	16	3	1	65	50	No	10	do	21
829	do	Philadelphia Orthopædic Hospital and Infirmary for Nervous Diseases.	Margaret S. Nelson	32	2½	9	126	90	No	9½	H. S.	22–32
830	do	Pennsylvania Hospital	Margaret A. Dunlop	72	3	20	315	230	No	9	1 year H. S.	21
831	do	Philadelphia General Hospital	Nellie May Rennyson	116	3	24	1,700	1,700	No	9½	H. S.	21
832	do	Philadelphia Lying-in Charity Hospital	Carrie C. Tallman, R. N.	20	2	12	60	35	Yes	9	C. S.	21–35
833	do	Philadelphia School for Nurses	Lillie Frazier	136	2	39			Yes		do	18–40
834	do	Polyclinic Hospital	Miss F. Freese, R. N.	30	3	10	100	75	No	9½	H. S.	20
835	do	Presbyterian Hospital	Caroline I. Milne, R. N.	58	3	17	230	140	No	9	1 year H. S.	21–35
836	do	Hospital of the Protestant Episcopal Church in Philadelphia.	Katharine Brown, R. N.	78	3	20	425	300	No	9½	do	21–35
837	do	St. Agnes' Hospital	Katherine Veronica Kane	49	3	6	304		Yes	8½	C. S.	21
838	do	School for the Training of Cadet Nurses of the St. Christopher's Hospital for Children.	Rena P. Fox	20	1½	12	55	40	Yes	9	do	18–32
839	do	St. Joseph's Hospital	Sister Elizabeth	61	2, 3	21	175	130	No	9	do	22–35
840	do	St. Luke's Hospital	Margaret Jones	21	3	9	55	41	No	10	do	21
841	do	St. Mary's Hospital	Frances J. Lundy	24	3		185	83	Yes	11	do	18
842	do	St. Timothy's Hospital	Eva Simonton, R. N.	21	3	4	75	48	No	9	12th grade	18–35
843	do	Samaritan Hospital	Gertrude H. Lauman, R. N.	50	16	3	135	115	No	8–10	H. S.	20–35
844	do	Stetson Hospital of Philadelphia	Lewis S. Somers, M. D.	15	3	3	55	30	No	10	do	21–30
845	do	Hospital of University of Pennsylvania	Anna Rogers	92	3	1	390		No	10	C. S.	21–35
846	do	West Philadelphia General Homœopathic Hospital.	Juliet Snyder	13	3	4	40	30		9½	H. S.	21
847	do	West Philadelphia Hospital for Women *	Elizabeth Walton Aucker	21	2½	2	50					
848	do	Woman's Southern Homœopathic Hospital of Philadelphia.	Mary A. Collett	9	2	4	39	26	Yes	8½	1 year H. S.	20–30
849	do	Hospital of the Woman's Medical College of Pennsylvania.*	Anna K. Bitner	15	2½	5	48					

* Statistics of 1910.

[1] Abbreviations used: C. S.—Common school. H. S.—High school.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	PENNSYLVANIA—contd.											
850	Phœnixville	Phœnixville Hospital	Agnes C. Shore	16	2½	7	75	23	No	10	H. S	21
851	Pittsburgh	Allegheny General Hospital	Gertrude Muldrew, R. N	97	3	26	325	300	No	9	do	21
852	do	Pittsburgh Training School for Nurses of the Homœopathic Hospital.	Caroline E. Gray, R. N	52	3	19	150	105	No	10	8th grade	21–35
853	do	Mercy Hospital	Sister M. Etheldreda	84	3	24	610	360	No	......	......	......
854	do	Passavant Hospital *	Sister Margaret	31	3	9	90	......	......	......	......	......
855	do	Pittsburgh Hospital	Sister Marcella	35	3	10	100	88	No	9	1 year H. S	21
856	do	Presbyterian Hospital	Mary M. Spears	36	3	10	100	86	No	10	do	21–35
857	do	St. Francis' Hospital	Edna Russell Sparey, R. N	66	3	11	535	325	No	9	do	19
858	do	St. John's General Hospital	Veda P. Baybrett	24	3	3	110	70	No	10	2 years H. S	21
859	do	St. Margaret's Memorial Hospital	Caroline E. Sparrow	17	3	....	80	48	No	9	H. S	20–35
860	do	South Side Hospital	Jeannette L. Jones	32	3	6	200	......	No	9	C. S	21–35
861	do	Western Pennsylvania Hospital	Jessie J. Turnbull	78	3	15	260	251	No	10½	H. S	21
862	Pittston	Pittston Hospital Association	Margaret M. Cumming	8	2	3	35	18	Yes	9	2 years H. S	......
863	Pottstown	Pottstown Hospital	Katharine A. Moyer, R. N	12	3	4	40	25	Yes	11	H. S	18–30
864	Pottsville	Pottsville Hospital	Miss E. A. Loomis	27	3	4	100	......	......	10	......	21
865	Punxsutawney	Adrian Hospital	Fannie Sanders	18	2	12	72	......	No	8	H. S	21
866	Reading	Homœopathic Medical and Surgical Hospital	Mrs. L. D. Chamberlain	18	3	4	75	......	Yes	12	do	18–30
867	do	Reading Hospital	Huldah Randall, R. N	20	3	4	65	62	No	9	do	21–30
868	do	St. Joseph's Hospital	Sister Mary Fulgentia	18	3	3	135	77	No	10	C. S	18–30
869	Ridgway	Elk County General Hospital*	Clara Smith Lynn	14	3	5	50	......	......	......	......	......
870	Roaring Spring	Nason Hospital	Olive M. Bayer, R. N	7	2½	4	40	20	Yes	9½	1 year H. S	21
871	Rochester	Rochester General Hospital	Blanche K. Fleming	6	3	....	36	19	No	8½	C. S	21–32
872	Sayre	Robert Packer Hospital	Mary D. Mitchell	22	2	....	90	65	No	9	H. S	21
873	Scranton	Hahnemann Hospital of Scranton	Emma Eachenbach	23	3	10	75	40	No	11	do	21–32
874	do	Moses Taylor Hospital	Janet Gordon Grant	....	3	6	84	61	No	9½	do	21–35
875	do	State Hospital	Miss M. Robertson	40	3	10	150	120	No	10	1 year H. S	20
876	Sharon	Christian H. Buhl Hospital	Adeline B. Sinsabaugh	12	3	3	60	34	No	10	C. S	21–35
877	South Bethlehem	St. Luke's Hospital	Marie Schley Brown	29	3	2	83	65	No	9½	do	20–35
878	Titusville	Titusville Hospital	Maude Williams	4	2½	2	25	14	Rarely	9	1 year H. S	20
879	Uniontown	Uniontown Hospital	Grace G. Brumbaugh	18	2⅔	8	84	50	No	9	H. S	20–35
880	Warren	Warren Emergency Hospital	Mary A. Hassett	15	3	4	75	......	Yes	10	C. S	20–35
881	Washington	Washington Hospital	Elizabeth M. Gainor	15	2½	6	60	30	No	10	do	19–35

882	West Chester	Chester County Hospital	M. E. Worrest	25	3	5	100	50	No	10	H. S.	20
883	Wilkes-Barre	Mercy Hospital	Sister Mary Antonia	36	2	15	125	70	No	12	do	20–35
884	do	Wilkes-Barre City Hospital	Caroline Hill, R. N.	37	2½	13	158	95	Yes	9	do	20–35
885	Wilkinsburg	Columbia Hospital	Helen Madison Ucker	53	3	12	150	85	No	8½	C. S.	20
886	Williamsport	Williamsport Hospital	Daisy B. Mann	32	3	13	162	93	No	10	H. S.	20–30
887	York	York Hospital and Dispensary	D. Jeannette Copeland	17	3	5	70	55	No	9	do	21–35
	PORTO RICO.											
888	Ponce	St. Luke's Memorial Hospital	Carl Vogel, M. D.	14	3	3	65	35	Yes	11	C. S.	22
889	San Juan	Insular School for the Training of Nurses of the Municipal Hospital.*	Pilar Cabrera	16	2	4	40					
890	do	Presbyterian Hospital	M. Louise Beaty	13	3	4	45		No	10	8th grade	17–25
	RHODE ISLAND.											
891	Newport	Newport Hospital	Janet MacLaurin	33	3	10	100	50	No	8½	H. S.	21–35
892	Pawtucket	Twin City Hospital*	William H. Helmer, M. D.	7	2	1	20					
893	Providence	East Side Hospital	Elizabeth P. Wilson, M. D.	14	3	3	35	20	No	10	C. S.	18
894	do	Rhode Island Hospital	Inez Clark Lord	160	3	45	400	310	No	10	do	21
895	do	St. Joseph's Hospital	Sister Mary Ovila	25	3	5	100	93	Yes	12	H. S.	23
896	Woonsocket	Woonsocket Hospital	Lucy C. Ayres	6	2	3	30	18	No	9	C. S.	21
	SOUTH CAROLINA.											
897	Charleston	Roper Hospital	Rosa A. Issertell	35	2	13	200	150	No	10	H. S.	18
898	do	Hospital and Training School for Nurses*	Celestine L. Martin	10	3	4	20					
899	do	St. Francis Xavier Infirmary	Sister Mary Bernardine	14	2		42	37	Yes	10		20–35
900	Chester	Pryor Training School for Nurses of the Magdalene Hospital.	Leila A. Bleeker	10	3	2	30	20	Yes	8	H. S.	18–35
901	Columbia	Columbia Hospital	Susan Shrive	26	3	9	56	45	No	9	do	21–35
902	do	Knowlton Hospital	A. B. Knowlton, M. D.	17	3	4	26	18	Yes	10	C. S.	21
903	do	Taylor Lane Hospital*	M. A. Evans, M. D.	9	3	3	30					
904	Sumter	Sumter Hospital	Lila M. Davis	14	3	2	35	30	Yes	9	H. S.	21–35
	SOUTH DAKOTA.											
905	Aberdeen	St. Luke's Hospital	Sister Mary Dominic	22	3	3	100		No	9	do	18
906	Deadwood	St. Joseph's Hospital	Sister M. Rose	22	3	7	50		Yes	9	8th grade	18
907	Hot Springs	Our Lady of Lourdes Hospital	Sister M. Augusta	20	3	3	52	40	Yes	9	do	18–30
908	Madison	Madison Hospital	Mrs. A. E. Clough	10	2	4	35	15	Yes	12	C. S.	18
909	Sioux Falls	Sioux Falls Hospital	Clara Savereide	15	2	5	35		Yes	10	do	20–35
910	Watertown	Watertown Hospital*	Winifred Boston	3	2	1	20					
911	Yankton	Sacred Heart Hospital*	Sister M. Juliana, R. N.	7	3	4	25					
	TENNESSEE.											
912	Chattanooga	Baroness Erlanger Hospital	Alma M. Weller	20	2	8	100	65	No	10		19
913	Knoxville	Knoxville General Hospital	Lucia K. Wagner	25	3	8	80	34	No	9	H. S.	20
914	Memphis	Presbyterian Home Hospital	Louise Buford	25	2	13	35	30	Yes	12	do	18–30
915	Nashville	Nashville City Hospital*	W. M. McCabe, M. D.	15	3	1	110					

*Statistics of 1910.

[1] Abbreviations used: C. S.—Common school. H. S.—High school.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	TENNESSEE—contd.											
916	Nashville	Walden University Meharry Medical College Mercy Hospital.	G. W. Hubbard	7	3	5	32	......	Yes	8	2 years H. S.	20
917	....do	St. Thomas' Hospital	Sister Scholastica	30	3	7	85	70	No	......	......	......
918	....do	Woman's Hospital of the State of Tennessee	Emily Gordon Friend, R. N.	17	2	4	40	30	No	9	H. S.	19
919	Sewanee	Hodgson Memorial Hospital*	Carmi Suddath	3	2	2	20	......	......	......	......	......
	TEXAS.											
920	Amarillo	St. Anthony's Sanitarium	Sister Mary Winifred	8	3	....	100	40	Yes	9	C. S.	18–28
921	Austin	Austin Sanitarium	Ethleen Rowe, R. N.	16	3	2	50	20	Yes	11	H. S.	18
922	....do	Seton Infirmary	Sister Ursula	12	3	3	50	......	Yes	9	C. S.	18–28
923	Dallas	St. Paul's Sanitarium	Sister Margaret	30	3	4	130	95	Yes	10	....do	21–35
924	....do	Texas Baptist Memorial Sanitarium	Mary Chiles Scott, R. N.	45	3	....	135	68	No	10	H. S.	21–35
925	El Paso	Hotel Dieu—Sanitarium	Sister Elizabeth	28	3	6	150	70	Yes	9	....do	21–35
926	....do	Providence Hospital	Miss E. L. Koehnback	20	3	20	60	......	No	10	....do	20–30
927	Fort Worth	St. Joseph's Hospital	Mother Cleophas	33	3	2	400	200	Yes	10	....do	20
928	Gainesville	Gainesville Hospital	James Edward Gilcreest, M. D.	7	2	3	20	10	Yes	9	....do	21–35
929	Galveston	John Sealy Hospital*	Ethel d'A. Clay	32	3	1	150	......	......	......	......	......
930	....do	St. Mary's Infirmary	Sister Mary Elizabeth	17	2	6	160	120	No	8	H. S.	18–36
931	Houston	Houston Infirmary Sanitarium	Sydney J. Smith, M. D.	12	3	3	100	65	Yes	10	C. S.	18–35
932	....do	St. Joseph's Infirmary	Sister M. Sebastian	25	2	4	200	100	No	11	H. S.	18–36
933	San Antonio	Baylor Hospital	Elizabeth Baylor	10	2	4	30	25	No	9	....do	19
934	....do	Physicians' and Surgeons' Hospital	Marjorie M. Taylor	18	2	1	50	38	No	8	......	20
935	....do	Santa Rosa Infirmary*	Sister M. Robert	34	3	....	250	......	......	......	......	......
936	Sherman	Saint Vincent's Sanitarium*	Sister Vincentia	19	3	7	75	......	......	......	......	......
937	Texarkana	Texarkana Hospital	Bess. A. Campbell, R. N.	8	2	4	......	15	No	8	H. S.	22–32
938	Victoria	Valley View Hospital	Selma E. Lichey	3	2	2	14	4	Yes	6	C. S.	19–30
	UTAH.											
939	Provo	Provo General Hospital	Zina Johnson	4	2	1	20	8	Yes	9	1 year H. S.	18–30
940	Salt Lake City	Holy Cross Hospital	Sister M. Sylvina	24	3	2	150	85	No	12	8th grade	18–35
941	....do	Dr. W. H. Groves' Latter Day Saints Hospital	Charlotte E. Dancy, R. N.	50	3	11	105	80	No	8	....do	19
942	....do	St. Mark's Hospital	F. D. Lees	40	3	13	150	100	No	8½	H. S.	18–35

	VERMONT.											
943	Brattleboro	Brattleboro Memorial Hospital	Mary Louise Wakefield	23	3	4	32	25	Yes	10	do.	18–35
944	Burlington	Mary Fletcher Hospital	Clara J. Churchill	43	3	8	120	90	Yes	10	1 year H. S.	20–35
945	Hardwick	John S. Holden Memorial Hospital *	Elizabeth S. Parker	3	3	1	15					
946	Montpelier	Heaton Hospital *	Elenora Stalker	20	2	6	40					
947	Proctor	Proctor Hospital	Annabel L. Stewart	12	2½	3	17	14	No	8½	C. S.	21–35
948	Randolph	Randolph Sanitorium	Florence L. Howe	8	2	5	15		Yes	10	do.	18–30
949	Rutland	Rutland Hospital	Anna A. Aitken	18	2½	9	40	3	Yes	10	H. S.	20–35
950	St. Albans	St. Albans Hospital	Nina A. Smith	10	2½	1	20	14	Rarely	10	do.	23–35
951	St. Johnsbury	Brightlook Hospital	E. Myrtle Miller	15	2	1	26	18	Yes	10	C. S.	21
952	Winooski	Fanny Allen Hospital	Sister Superior in charge of nurses.	15	2	10	65	47	Yes	9	do.	19–35
	VIRGINIA.											
953	Alexandria	Alexandria Hospital	Miss N. A. Simmons, R. N.	9	3	2	36		No	12	do.	21
954	Charlottesville	University of Virginia Hospital *	Mary Jean Hurdley	28	3	5	110					
955	Danville	Danville General Hospital	Celia A. Brian, R. N	20	3	1	75	26	Yes	8	C. S.	22–35
956	Fredericksburg	Mary Washington Hospital	F. H. Bescherer, R. N	6	3	2	16	7	Yes	9	do.	20
957	Hampton	Hampton Training School for Nurses of the Dixie Hospital.*	Esther Morgan, M. D	23	3	7	23					
958	Lynchburg	Home and Retreat Hospital *	S. L. Earhart		3	4	30					
959	Newport News	St. Francis Hospital	Miss L. G. Atkinsin	6	3	2	25	20	Yes	10	H. S.	19
960	Norfolk	Norfolk Protestant Hospital *	Ethel Smith	32	3	11	140					
961	do.	St. Vincent's Hospital	Sister Catherine	46	3	14	300	150	No	10	C. S.	21–30
962	do.	Sarah Leigh Hospital	Mary A. Newton	21	3	3	50	37	No	8½	do.	20–33
963	Petersburg	Petersburg Hospital	Mary Julia Moore	15	3	4	55		No	10	H. S.	20
964	Portsmouth	King's Daughters' Hospital *	Florence E. Leslie	8	3	1	30					
965	Richmond	Hygeia Hospital *	Miss F. W. Henderson	7	3	1	40					
966	do.	Memorial Hospital	Mary K. Smith, R. N	45	3	15	150		No	8	1 year H. S.	21
967	do.	Retreat for the Sick	Lottie G. Thomas, R. N	18	3	8	54		Yes	8½	do.	20–35
968	do.	St. Luke's Hospital	Ruth I. Robertson, R. N	35	3	8	80		No	9	H. S.	22
969	do.	Sheltering Arms Free Hospital	Mary Broadders	10	3	2	40	30	No	9	C. S.	21
970	do.	University College of Medicine Virginia Hospital	Agnes D. Randolph, R. N	40	3	14	80	55	No	8	do.	21
971	Roanoke	Roanoke Hospital	Margaret Ossenbeck, R. G. N	12	3	4	42	26	No	10	do.	18–30
972	Staunton	King's Daughters' Hospital	Mrs. Jane Brown Lanson	8	3		21	15	No	8–10	H. S.	21
973	Winchester	Winchester Memorial Hospital	Angelica P. Didier	10	3	2	36	18	Yes	8	do.	21
	WASHINGTON.											
974	Aberdeen	Aberdeen General Hospital	Mrs. Paul Smits	10	3		50	18	Yes	9½	C. S.	18
975	do.	St. Joseph's Hospital	Sister M. Augustine	4	2½	2	60	10	No	10	1 year H. S.	20–35
976	Bellingham	do.	Sister M. Aloysius	20	3	2	100	25	Yes	8	H. S.	20
977	do.	St. Luke's Hospital	Ella A. Wilkinson, R. N	10	2½	3	60	33	No	10	8th grade	20
978	Colfax	St. Ignatius' Hospital *	Sister Superior	6	3		52					
979	Everett	Everett Hospital *	Ida H. Brown	15	2½	4	50					
980	Hoquiam	Hoquiam General Hospital	Ruby C. Rogers, R. N	11	2½	6	60	45	No	9	H. S.	20–30
981	North Yakima	St. Elizabeth's Hospital	Sister Laurienne	12	3	3	60	3	No	9	8th grade	20
982	Port Angeles	Port Angeles General Hospital *	Mrs. Shepard	3	2½		35					
983	Seattle	Minor Private Hospital	Lucy I. Pringle, R. N	26	3	8	56	50	No	8	H. S.	20–30
984	do.	Providence Hospital	Sister Vincent	45	3	4	180		No	9½	C. S.	20–30

* Statistics of 1910.

[1] Abbreviations used: C. S.—Common school. H. S.—High school.

TABLE 3.—*Statistics of schools for the training of professional nurses for the school year 1910–11—Class A*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	WASHINGTON—contd.											
985	Seattle	Seattle General Hospital	Evelyn H. Hall	55	3	17	110	95	No.	9	8th grade	20
986	do	Wayside Emergency Hospital	Katherine Major	8	3		50		No.	8½	H. S.	20
987	Spokane	Maria Beard Deaconess Home	Myrtle M. Berkey	28	2½	14	50	32	No.	8½	do	21
988	do	St. Luke's Hospital	Johanna Shepherd Burns		3	10	65	55	No.	8	1 year H. S.	20–30
989	do	Spokane General Hospital	Jessie Marie Foster, R. N.	8	2	4	40	20	No.	10	H. S.	20
990	South Bend	South Bend General Hospital	Miss Skaggs	5	3	1	30	8	Yes	10	do	18
991	Tacoma	Fannie C. Paddock Memorial Hospital*	Olive M. Sill	56	2½	12	100					
992	do	St. Joseph's Hospital	Sister Mary, O. S. F.	28	2, 2½	7	80	80	No.	10	H. S.	19
993	Walla Walla	St. Mary's Hospital	Sister Hilary	15	3	1			No.	10	8th grade	18
	WEST VIRGINIA.											
994	Charleston	Charleston General Hospital	Emma Vernon	11	3	4	60	30	Yes	12	C. S.	21
995	Clarksburg	Kessler Hospital	S. M. Mason, M. D.	10	3		30	18	Yes	9½	do	18–35
996	do	St. Mary's Hospital*	Sister M. Adelaide, R. N.	15	3	3	70					
997	Elkins	Davis Memorial Hospital	Miss M. E. Walker	12	3	3	50	20	Yes	9	C. S.	20
998	Fairmont	Cook Hospital	J. C. Miller	24	3	4	55	20	Rarely		H. S.	18–25
999	do	Miners' Hospital No. 3	J. W. McDonald, M. D.	8	2	1	50	35	No.		do	23
1000	Glendale	Reynolds Memorial Hospital*	Wilma Hastings	10	2	5	84					
1001	Hansford	Sheltering Arms Hospital	Miss M. J. Parry	15	2		90	52	No.	10	H. S.	21–35
1002	Hinton	Hinton Hospital*	Marion D. Lingenfelter	27	3	5	75					
1003	Huntington	Huntington General Hospital	Laura B. Illick	9	2	1	35	25	No.	10		21
1004	do	Mount Hope Hospital*	Shelly Bryan	18	3	5	100					
1005	Keyser	Hoffman Hospital	C. S. Hoffman	9	3	4	25	13	No.	10	C. S.	18–27
1006	McKendree	Miners' Hospital No. 2	B. B. Wheeler, M. D.	6	2		50	35	No.	9	H. S.	18–30
1007	Parkersburg	City Hospital	C. W. Shaw	7	2	5	32		No.	8		21
1008	do	St. Joseph's Hospital	Sister M. Bernadette Gans	10	3	3	50	25	No.	9	H. S.	21
1009	Wheeling	City Hospital*	Mrs. M. G. Carpenter	24	2	5	60					
	WISCONSIN.											
1010	Beloit	H. P. Strong Emergency Hospital	Martha J. Head	6	2	4	17	9	Yes	8		
1011	Green Bay	Deaconess Sanitarium	Tillie Giese	10	3		30	20	Yes	10	H. S.	20–30
1012	do	St. Mary's Hospital	Sister St. Catherine	14	3	5	35	30	Yes	10	C. S.	22–29

1013	Janesville	Palmer Memorial Mercy Hospital*	Anna G. Dastych	11	2½	2	20					
1014	Kenosha	Kenosha Hospital	Helen de Spelder-Moore	15	2		50	28	No	8½	1 year H. S.	20
1015	La Crosse	La Crosse Lutheran Hospital*	Annabel T. Paxton	25	3	5	80					
1016	do	La Crosse Public Hospital*	Ella C. Ingwersen	16	3	7	50					
1017	do	St. Francis' Hospital	Sister M. Gregory	20	3	1			Rarely	8	8th grade	20
1018	Madison	Madison General Hospital	Elfreda Johnston, R. N.	21	2	9	60	40	No	9	C. S.	21–35
1019	Milwaukee	Wisconsin Training School for Nurses of the Lakeside Hospital.	Elysian Thomas	24	2½	9	36	15	Yes	12	H. S.	20–30
1020	do	Milwaukee Hospital	Sister Emma Lerch	22	3	6	86	80	No	10	do	20–35
1021	do	St. Joseph's Hospital	Sister Mary Regina	40	2½	12	125	110	No	9–10	8th grade	20
1022	do	St. Mary's Hospital	Sister M. Dolores	40	3	12	200	100	No	10	do	22–30
1023	do	Trinity Hospital	Julia A. Duffy	70	3	26	80		Rarely	9	do	20–35
1024	Racine	Alice Horlick Memorial Hospital	Alma B. Kundert	12	2	1	38		Yes	10		20–30
1025	Wauwatosa	Milwaukee County Hospital	Helen W. Kelly	34	2	10	250	200	No	9	C. S.	21
	WYOMING.											
1026	Cheyenne	St. John's Hospital	Jessie Irwin	15	2	4	75	33	No	10½	H. S.	20–30
1027	Rock Springs	Wyoming General Hospital	Martha A. Converse	13	2	4	75	50	Yes	9½	do	20
1028	Sheridan	Sheridan General Hospital	Harriet Hastings	12	2	6	60	30	Yes	10		21

* Statistics of 1910.

[1] Abbreviations used: C. S.—Common school. H. S.—High school.

TABLE 4.—*Hospitals and schools offering postgraduate or special courses.*

	Location.	Name of school or hospital with which it is connected.	Superintendent of courses.	Students enrolled.	Months in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Entrance requirements.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	CALIFORNIA.											
1	San Francisco	San Francisco Maternity Hospital	E. G. Harrison, M. D	4	8	4	13		No		C. S	21–41
	DISTRICT OF COLUMBIA.											
2	Washington	Florence Crittenton Training School for Nurses *	Margaret L. White	12	7	9	8					
	ILLINOIS.											
3	Chicago	Chicago Lying-in Hospital and Dispensary Post-Graduate School.	Mrs. Emma E. Koch	8	3		15		No	10		
	MASSACHUSETTS.											
4	Boston	Boston Floating Hospital Postgraduate School	Sarah A. Egan	52	3	44	240	167				
5	do	Infants Hospital Postgraduate School	Margaret Farquhar	6	4				No	9		
6	Brookline	Free Hospital for Women Postgraduate School	Hannah Jane Ewin	15	4½	14	60	40	No	8–9		
	MISSOURI.											
7	St. Louis	St. Louis Children's Hospital *	Ruth Riley	15	8		104					
8	do	St. Louis Maternity Hospital	Miss O. Beyer	12	2		30	18				
	NEW YORK.											
9	Brooklyn	St. Christopher's Hospital for Babies *	Jane Emily O'Daly	34	6		41					
10	New York City	General Memorial Hospital Postgraduate School	Helen Knight Smith, B. A., R. N.	25	6		100	58	No	9–10		
11	do	Hospital for Scarlet Fever and Diphtheria Patients	Mary E. Kennedy, Principal	8	2,3		40		No	9		
12	do	New York Eye and Ear Infirmary	Elizabeth G. Whitman	43	3		176	130	No			
13	do	New York Polyclinic Medical School and Hospital Postgraduate School.	Agnes D. Carson, R. N		9	32	96	80	No	11		
14	do	Sloane Hospital for Women	Mary E. Huthinson	52	3		135	110	No	9		
15	do	Society of Lying-in Hospital of the City of New York.	Mary I. Bustard	55	3		196	157	No	12		

	OHIO.											
16	Mt. Vernon..........	Ohio State Sanatorium..................	C. Elizabeth Allen............	4	3	......	96	63	......	......	......	......
	PENNSYLVANIA.											
17	Philadelphia..........	Jewish Maternity Association Postgraduate School*.	Rose Rubin, M. D............	10	2,3	......	22	......	......	......	......	......
18	.....do..............	Maternity Hospital........................	Mary D. Roche..............	5	3	......	22	16	......	9	......	......
19	.....do..............	Pennsylvania Orthopædic Institute and School of Mechano-Therapy.	Max J. Walter..............	73	3	51	......	40	No....	6–8	C. S..	21
20	.....do..............	Preston Retreat Lying-in Hospital *..........	Margaret A. Thomas..........	60	2	......	50	......	......	......	......	......
21	Pittsburgh..........	Elizabeth Steel Magee Hospital...............	Frances A. Stone...........	7	3,6	......	59	46	No....	8	......	......
22	.....do..............	Reineman Maternity Hospital *..............	Charles Edward Ziegler.......	20	3,6	19	34	......	......	......	......	......
	RHODE ISLAND.											
23	Providence..........	Providence Lying-in Hospital................	Alida Young................	16	4	......	50	30	No....	10	......	......

* Statistics of 1910.

[1] Abbreviation used: C. S.—Common school.

TABLE 5.—*Statistics of schools for the training of professional nurses, for the school year 1910–11—Class B.*

[Class B includes schools connected with hospitals for the treatment of nervous and mental diseases, insane, etc.]

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	ALABAMA.											
1	Tuscaloosa	Brice Hospital	J. T. Searcy, M. D.	31	2	12	1,500	1,510	Rarely.	8–10	C. S.	17
	CONNECTICUT.											
2	Middletown	Connecticut State Hospital	Anna E. Shepherd	21	2	8	2,500	......	No	10½	C. S.	18
3	Norwich	Norwich State Hospital	Thomas F. Erdman, M. D.	16	2	6	850	......	Yes	10½–11½	C. S.	18
	DISTRICT OF COLUMBIA.											
4	Washington	Government Hospital for Insane	Josephine M. Stransky, M. D.	47	2	18	2,978	2,887	No	10	C. S.	18
	ILLINOIS.											
5	Anna	Anna State Hospital	May Kennedy, R. N.	60	3	5	1,560	......	No	12	C. S.	20
6	Dunning	Dunning State Hospital	Charles Eberlein, M. D.	162	3	13	......	2,308	No	10	C. S.	......
7	Jacksonville	Jacksonville State Hospital	Gertrude E. Craig, R. N.	75	3	4	1,570	1,565	No	12	C. S.	......
8	Kankakee	Kankakee State Hospital	Sadie Barnes	75	3	10	140	130	No	10	C. S.	18–21
9	Peoria	Peoria State Hospital	George A. Zeller	100	3	6	2,100	2,100	No	8	C. S.	18
	IOWA.											
10	Cherokee	Cherokee State Hospital	M. N. Voldeng, M. D.	......	3	4	......	......	No	13	1 year H. S.	18
11	Clarinda	Clarinda State Hospital	Max E. Witte	19	3	......	1,150	1,062	No	......	C. S.	......
12	Glenwood	Iowa Institution for Feeble Minded Children.	George Mogridge, M. D.	8	3	3	75	47	Yes	10	C. S.	18
13	Independence	Independence State Hospital	W. P. Crumbacker, M. D.	91	2,3	21	1,295	1,171	No	13	H. S.	20–23
14	Mt. Pleasant	Mt. Pleasant State Hospital	C. F. Applegate, M. D.	20	2	10	1,200	1,060	No	12	C. S.	20

	KANSAS.											
15	Ossawatomie	Ossawatomie State Hospital	L. L. Uhls	11	2	3	1,300	1,290	No	12	C. S	18
16	Topeka	Topeka State Hospital	T. C. Biddle	60	2	5	1,380	1,360	No	12	......	......
	KENTUCKY.											
17	Hopkinsville	Western Kentucky Asylum	H. P. Sights	17	3	3	1,200	1,150	No	12	C. S	18–35
	MAINE.											
18	Augusta	Maine Insane Hospital	Jennie M. Smith, R. N	13	2	6	900	890	No	9	C. S	18–25
19	Bangor	Bangor Insane Hospital	Mrs. Mary E. Hickey	35	2	7	600	500	Yes	12	C. S	21
	MARYLAND.											
20	Towson	Sheppard and Enoch Pratt Hospital	Cora R. McCabe	19	2	10	150	105	No	10	H. S	21
21	Sykesville	Springfield State Hospital	J. Clement Clark, M. D	14	2	5	1,040	1,025	Rarely	12	C. S	20
	MASSACHUSETTS.											
22	Hathorne	Danvers State Hospital	Eunice A. Frick	23	2	7	1,500	1,437	No	10½	C. S	21
23	Medfield	Medfield State Hospital	Edward French, M. D	16	2½	8	1,750	......	No	12	......	......
24	Monson	Monson State Hospital	Everett Flood	26	3	11	900	850	Yes	9	C. S	21
25	Northampton	Northampton State Hospital	Alice E. Bedell	12	2	6	899	872	No	12	C. S	18
26	Taunton	Taunton State Hospital	Reba G. Cameron, R. N	113	3	8	1,000	......	No	8	......	......
27	Tewksbury	State Infirmary	Laura E. McEachran, R. N	74	3	21	2,000	......	No	9¾	......	21–30
28	Waverley	McLean Hospital	Lucia E. Woodward	137	2½	37	225	222	No	12	H. S	20–35
29	Westborough	Westborough Hospital	Lottie Haines Miller	90	2¼	26	1,000	1,038	No	10	C. S	20
30	Worcester	State Hospital	A. M. Quimby, M. D	90	2	12	1,400	1,353	No	10	C. S	......
	MICHIGAN.											
31	Kalamazoo	Michigan Asylum	Theresa G. Leach	80	2	30	1,950	1,926	No	8	H. S	21–30
32	Newberry	Newberry State Hospital	Helen Cairns Sinclair, R. N	27	2½	4	825	......	No	9½	1 year H. S	19
33	Pontiac	Eastern Michigan Asylum	E. A. Christian, M. D	50	2	......	1,435	1,390	No	14	C. S	20–22
	MINNESOTA.											
34	Fergus Falls	Fergus Falls State Hospital	George O. Welch	20	3	6	1,635	1,613	Yes	10	......	18–35
35	Rochester	Rochester State Hospital	R. M. Phelps	80	3	16	......	1,120	No	12	......	20
36	St. Peter	St. Peter State Hospital	H. A. Tomlinson	61	3	18	1,075	1,002	Yes	12	C. S	18–27
	NEBRASKA.											
37	Lincoln	Lincoln State Hospital	Lillian B. Stuff, R. N	26	3	......	700	600	No	14	C. S	18–35
38	Norfolk	Norfolk State Hospital	Andrew Johnson, M. D	11	2½	6	342	314	No	10–12	C. S	21–35
	NEW HAMPSHIRE.											
39	Concord	New Hampshire State Hospital	Etta M. Bagley	60	3	15	1,114	......	No	......	......	21–35

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[1] Abbreviations used: C. S.—Common school. H. S.—High school.

TABLE 5.—*Statistics of schools for the training of professional nurses, for the school year 1910–11—Class B*—Continued.

	Location.	Name of school or hospital with which it is connected.	Superintendent of nurses.	Students enrolled.	Years in course.	Graduates in 1911.	Capacity (beds).	Average daily number of patients.	Are students sent into families during training?	Daily number of hours on duty.	Requirements for admission.	
											Education.[1]	Age.
	1	2	3	4	5	6	7	8	9	10	11	12
	NEW JERSEY.											
40	Cedar Grove	Essex County Hospital for the Insane.	Guy Payne, M. D.	50	2	12	1,500	1,350	Yes	13		21
41	Greystone Park	New Jersey State Hospital	B. D. Evans, M. D.	63	2	12	2,250	2,206	Rarely	16	C. S.	21
42	Trenton	New Jersey State Insane Hospital	Elvina R. Bailey, R. N.	21	2	11	1,425		No.	10		20–35
43	Vineland	New Jersey Training School *		3	3		40					
	NEW YORK.											
44	Binghamton	Binghamton State Hospital	Charles G. Wagner, M. D.	23	2	8	2,252	2,303	Rarely	11½	1 year H. S.	20
45	Brooklyn	Long Island State Hospital	Helen Clune	26	2	6	786	741	No.	11	1 year H. S.	21
46	Buffalo	Buffalo State Hospital	Arthur W. Hurd, M. D.	38	2	19	1,960	1,953	Rarely	10	C. S.	18
47	Central Islip	Central Islip State Hospital	George A. Smith, M. D.	47	2	14	4,300		No.	10½	H. S.	21–35
48	Gowanda	Gowanda State Homœopathic Hospital.	Daniel H. Arthur, M. D.	36	2	11	1,100	1,072	Rarely	11		18
49	Kings Park	Kings Park State Hospital	William Austin Macy, M. D.	24	2	13	3,464	3,226	No.	12	1 year H. S.	18
50	Middletown	Middletown State Homœopathic Hospital.	Maurice C. Ashley, M. D.	36	2	14	2,020	2,000	No.	12	1 year H. S.	19
51	New York City	Manhattan State Hospital	Ella B. Kurtz, R. N.	35	2	15	4,600	4,488	No.	12½	8th grade	19
52	Ogdensburg	St. Lawrence State Hospital *	Josephine A. Callahan	43	2	7						
53	Poughkeepsie	Hudson River State Hospital	Charles W. Pilgrim, M. D.	27	2	12	3,000	2,924	No.	11	C. S.	18
54	Rochester	Rochester State Hospital	Mary Elizabeth Bell, R. N.	45	2	16	1,454	1,401	No.	11½		18
55	Utica	Utica State Hospital	Bessie B. Tibbitts, R. N.	49	2	24	1,443	1,400	No.	12½		
56	Willard	Willard State Hospital	R. M. Elliott, M. D.	27	2½	11	2,432	2,368	No.	10		18–35
	OHIO.											
57	Cleveland	Cleveland State Hospital	Charles H. Clark, M. D.	45	2	13	1,565	1,508	No.	12	C. S.	21
58	Columbus	Columbus State Hospital	Oral G. Perkins	26	2	17	1,730	1,723	No.	13	C. S.	21
59	Massillon	Massillon State Hospital	Mary Weise	60	3	16	1,630	1,600	No.	10½	C. S.	21–45

	PENNSYLVANIA.											
60	Danville	State Hospital for the Insane	H. B. Meredith, M. D	68	2	21	......	......	No.		......	20–30
61	Dixmont	Dixmont Hospital for the Insane	Miss B. M. Cornwall	130	2	2	600	......	No.	10	C. S.	20–35
62	Norristown	State Hospital for the Insane (men)	W. W. Richardson, M. D	25	2	8	1,380	......	No.	10½	C. S.	20
63	do	State Hospital for the Insane (women)	Elizabeth C. Spencer, M. D	60	2	9	1,460	......	No.	12,14	......	18–30
64	Philadelphia	Friends' Asylum for the Insane	Eva Rawlings, M. D	......	2	12	200	189	No.	13½	......	18–35
65	Polk	State Institution for Feeble Minded	J. M. Murdock	40	2	10	1,580	......	No.	8	C. S.	20
66	Warren	State Hospital for the Insane	W. W. Hawke, M. D	39	2	5	1,417	1,400	No.	11	C. S.	21–35
	RHODE ISLAND.											
67	Providence	Butler Hospital *	R. Helen Cleland	130	2,3	15	200	......	......	......	......	......
	SOUTH CAROLINA.											
68	Columbia	State Hospital for Insane *	Fanny Irwin	121	2	7	1,575	......	......	......	......	......
	VERMONT.											
69	Waterbury	Vermont State Hospital *	Josephine E. Case	17	2	5	595	......	......	......	......	......
	VIRGINIA.											
70	Staunton	Western State Hospital	J. S. de Jarnette, M. D	7	3	3	1,182	1,107	Rarely.	14	C. S.	19

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* Statistics of 1910.

[1] Abbreviations used: C. S.—Common school. H. S.—High school.

UNITED STATES BUREAU OF EDUCATION
BULLETIN, 1912: NO. 8 - - - - - - WHOLE NUMBER 476

PEACE DAY

(MAY 18)

SUGGESTIONS AND MATERIAL FOR ITS OBSERVANCE IN THE SCHOOLS

Compiled by FANNIE FERN ANDREWS
SECRETARY OF THE AMERICAN SCHOOL
PEACE LEAGUE

DEPARTMENT OF THE INTERIOR

WASHINGTON
GOVERNMENT PRINTING OFFICE
1912

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LETTER OF TRANSMITTAL.

Department of the Interior,
Bureau of Education,
Washington, D. C., March 5, 1912.

Sir: Among the many movements of modern times for the advancement of civilization and the relief of humanity from unnecessary burdens of expenditure and of paralyzing fear, none is more significant than that for arbitration and world-wide peace. This movement has, I believe, been made possible by the education of the masses of the people in all the more progressive countries of the world, and will succeed finally only as education becomes more universal. Like all great constructive movements for the uplift and freedom of the people, it must depend on the intelligence and understanding of the people themselves. To any such end no agency is more effective than that which works through the schools, in which the citizens of the future are gathered during their formative years. Because of the constant increase in the number of children in our schools, it is increasingly true that whatever we would have in the nation of to-morrow we should put into the schools of to-day. In these workshops of humanity the future is formed and determined to an extent and degree greater than anywhere else.

In this movement for international arbitration and peace the schools are interested for another reason. The cost of war and of armed peace is still larger in the civilized countries of the world than the cost of schools and of other formal means of education. Were it possible to deliver the world immediately from this burden of an outgrown and antiquated institution by bringing in the reign of reason, good will, and constructive cooperation, the opportunities for education might at once be increased from two to four fold throughout the world without any increase in the total burden of taxation.

One of the most effective ways of fixing the attention of children and making lasting impressions on their minds is through well-arranged and attractive programs for days set apart for special purposes. For these days children and teachers make unusual preparation. Facts and principles are committed to memory, never to be forgotten, and are emotionalized and vitalized by poetic sentiment, music, and song. The whole is emphasized probably by one or more addresses made by prominent citizens of the community. Such a program is that prepared, at my request, by Mrs. Fannie Fern Andrews, secretary of the International School Peace League, organized and maintained for the purpose of fostering the propaganda of peace through the schools. In 1906 the Commissioner of Education, Dr. Elmer Ellsworth Brown, recommended that the 18th day of May, the anniversary of the assembling of the first Peace Conference at The Hague, should be observed as Peace Day in the schools. If observed at all, it should be in an intelligent and fitting way. For this teachers need help. To offer such help is a proper function of the Bureau of Education. I therefore recommend the publication of this program as a bulletin of the Bureau of Education and suggest that all or portions of it be reprinted by State departments of education in sufficient quantities to supply all the teachers in the several States.

Very respectfully, P. P. CLAXTON,
Commissioner.

The SECRETARY OF THE INTERIOR.

SUGGESTED PROGRAM FOR THE EIGHTEENTH OF MAY.

MUSIC.

Recessional.	Music: De Koven. Words: Kipling.

RECITATION.

Ring out the Old; Ring in the New.	Tennyson.

READING.

By sixteen pupils.

(a) The Dawn of World Peace.	William Howard Taft.
(b) The Significance of the Eighteenth of May.	Fannie Fern Andrews.

MUSIC.

These Things Shall Be.	Tune: Duke Street. Words: Symonds.
Oh, Beautiful, My Country.	Tune: Webb.

RECITATION.

Tubal Cain.	Charles Mackay.

QUOTATIONS.

What Soldiers and Statesmen Have Said about War.

MUSIC.

Hear, O ye Nations.	Tune: Lyons. Words: F. L. Hosmer.
Keller's American Hymn. Chorus, Angel of Peace.	O. W. Holmes.
America.	S. F. Smith.

PEACE DAY—MAY 18.

SUGGESTIONS AND MATERIAL FOR ITS OBSERVANCE IN THE SCHOOLS.

THE DAWN OF WORLD PEACE.

By WILLIAM HOWARD TAFT.

The development of the doctrine of international arbitration, considered from the standpoint of its ultimate benefits to the human race, is the most vital movement of modern times. In its relation to the well-being of the men and women of this and ensuing generations, it exceeds in importance the proper solution of various economic problems which are constant themes of legislative discussion or enactment. It is engaging the attention of many of the most enlightened minds of the civilized world. It derives impetus from the influence of churches, regardless of denominational differences. Societies of noble-minded women, organizations of worthy men, are giving their moral and material support to governmental agencies in their effort to eliminate, as causes of war, disputes which frequently have led to armed conflicts between nations.

The progress already made is a distinct step in the direction of a higher civilization. It gives hope in the distant future of the end of militarism, with its stupendous, crushing burdens upon the working population of the leading countries of the Old World, and foreshadows a decisive check to the tendency toward tremendous expenditures for military purposes in the Western Hemisphere. It presages at least partial disarmament by Governments that have been, and still are, piling up enormous debts for posterity to liquidate, and insures to multitudes of men now involuntarily doing service in armies and navies employment in peaceful, productive pursuits.

Perhaps some wars have contributed to the uplift of organized society; more often the benefits were utterly eclipsed by the ruthless waste and slaughter and suffering that followed. The principle of justice to the weak as well as to the strong is prevailing to an extent heretofore unknown to history. Rules of conduct which govern men in their relations to one another are being applied in an ever-increasing degree to nations. The battle field as a place of settlement of disputes is gradually yielding to arbitral courts of justice. The interests of the great masses are not being sacrificed, as in former times, to the selfishness, ambitions, and aggrandizement of sovereigns, or to the intrigues of statesmen unwilling to surrender their scepter of power. Religious wars happily are specters of a medieval or ancient past, and the Christian Church is laboring valiantly to fulfill its destiny of " Peace on earth."

If the United States has a mission, besides developing the principles of the brotherhood of man into a living, palpable force, it seems to me that it is to blaze the way to universal arbitration among the nations, and bring them into more complete amity than ever before existed. It is known to the world that we do not covet the territory of our neighbors, or seek the acquisition of lands on other continents. We are free of such foreign entanglements as frequently conduce to embarrassing complications, and the efforts we make in behalf of international peace can not be regarded with a suspicion of ulterior motives. The spirit of justice governs our relations with other countries, and therefore we are specially qualified to set a pace for the rest of the world.

The principle and scope of international arbitration, as exemplified in the treaties recently negotiated by the United States with Great Britain and France, should commend itself to the American people. These treaties go a step beyond any similar instruments which have received the sanction of the United States, or the two foreign powers specified. They enlarge the field of arbitrable subjects embraced in the treaties ratified by the three Governments in 1908. They lift into the realm of discussion and hearing, before some kind of a tribunal, many of the causes of war which have made history such a sickening chronicle of ravage and cruelty, bloodshed and desolation.

THE COST OF WAR.

By David Starr Jordan.

International war has been the primal curse of the European world. It has virtually come to an end, because of its tremendous cost. The nations of Europe are in the grasp of gigantic debts which devour all the sums which can be raised through taxation. No war can be fought save on borrowed money, and the great international bankers, the " Unseen Empire of Finance," do not willingly loan money to one nation, to be used in destroying their own investments in bonds and properties of another nation. The most powerful of the reigning houses of Europe is the house of Rothschild, which in its great central offices in London, Paris, Berlin, Vienna, and Amsterdam, determines by its silent nod the questions of war and peace among the nations of

Europe. To control the operations of nations it is not necessary to own them. It is needful only to control their debt.

War debt began with the nineteenth century. Not until the establishment of constitutional government had nations any credit in the world of finance. The bond of a king was notoriously bad security. Since 1800 the war debts of the nations have grown by leaps and bounds. That of Europe as a whole amounts to more than $26,000,000,000, bearing interest at the rate of $1,150,000,000 per year. The debt of France is nearly $6,000,000,000; that of Russia, $5,000,000,000; that of the United Kingdom, $3,700,000,000; that of Germany, including the debts of Prussia and Bavaria, nearly the same; that of Italy, $2,800,000,000; that of Spain, $1,800,000,000; that of Japan, $1,300,000,000. All these "endless caravans of ciphers" represent sums which have never been paid, will never be paid, can never be paid so long as the present system of national armament goes on. For practically the entire amounts now raised by taxation in civilized nations go into the support of armies and navies. The United States, in splendid isolation from old entanglements, without an enemy in the world, and bound by ties of blood and commerce to all civilized nations, spends 73 per cent of her income in this way. The civil, or nonmilitary, expenditures of Europe are so small as to be negligible.

ANNUAL ARMAMENT BUDGETS OF 10 NATIONS.

Countries.	Fiscal year.	Expended for Army.	Expended for Navy.	Total military charge.
Austria-Hungary	1909	$69,578,000	$12,687,000	$82,265,000
France	1910	164,569,000	68,299,000	232,868,000
Germany	1910-11	177,462,000	39,513,000	216,975,000
Great Britain	1909-10	137,175,000	175,715,000	312,890,000
Italy	1909-10	61,745,000	33,927,000	95,672,000
Japan	1909-10	36,146,000	17,662,000	53,808,000
Russia	1910	240,358,000	44,624,000	248,982,000
Spain	1910	32,814,000	6,271,000	39,085,000
Turkey	1909	[1] 49,667,000	[2] 5,530,000	55,197,000
United States	1909-10	158,173,000	123,974,000	282,147,000
Total	....	1,127,687,000	528,202,000	1,655,889,000

[1] Whitaker's Almanack, 1910.

[2] Almanac de Gotha, 1910.

The total annual military expenditures of the world approximate $2,250,000,000.

The cost of militarism in the whole world is nearly $4,000,000,000 yearly in the time of peace. In time of actual war the waste is incalculable. Well may Bastiat observe that, "War is an ogre who devours as much when he is asleep as when he is awake."

THE COST OF ARMED PEACE.

Could the money which the United States expends annually for military defense be used for education, the sum would be sufficient to accomplish the following things:

To establish and maintain a great national university with an annual income of ten million dollars, which is three times as much as the income of the wealthiest of the universities in this country;

To establish and maintain in each of the States a new university with an annual income of one million dollars;

To establish and maintain an average of one hundred new public high schools for each of the States, each school having an annual income of twenty thousand dollars;

To establish and maintain an average of five new normal schools for each of the States, each school having an annual income of one hundred thousand dollars;

To establish and maintain an average of five new technological schools for each of the States, each school having an annual income of one hundred thousand dollars;

To establish and maintain an average of thirty new agricultural schools for each of the States, each school having an annual income of fifteen thousand dollars;

To add one million dollars annually to the common school fund of each of the States;

To purchase textbooks for all pupils in all of the schools, public and private, in all of the States of the Union;

To give to each of the States of the Union annually a quarter of a million dollars for public libraries.

At the present rate of expenditure the four countries of Germany, France, Great Britain, and the United States will spend in the next 40 years, the life of one generation, for the support of armies and navies an amount sufficient to build twenty million country and village houses at an average cost of two thousand five hundred dollars each. With father, mother, and four children in each of these houses they would furnish homes for one hundred and twenty millions of people, which is more than the total present population of these four countries living in villages and the open country. Thus the fear of war is consuming the homes of the rural and village population of these great nations in a single generation.

It is estimated that the total direct cost of the armies and navies of the world each year in time of peace is two and one-half billion dollars, which equals the total valuation of the wheat and corn crops of the whole of the United States.

The total direct and indirect cost of the military system of the world, including interest on war debts, pensions to soldiers, and the loss of time of men engaged in an occupation which produces no wealth is almost equal each year to the market value of all the crops of all kinds grown in all the fields in all of the States of the Union.

So much do we and so much does the world pay for what would be unnecessary if all the nations would agree to arbitrate their differences and to live in peace and unselfish cooperation. The children in the schools of the world to-day can, if they will, bring about such a condition to-morrow and relieve the world of the great evil and desolation of war and of the great and unnecessary burden of armed peace.

THE SIGNIFICANCE OF THE EIGHTEENTH OF MAY.

By Mrs. Fannie Fern Andrews.

On the Eighteenth of May, 1899, an event took place which will always be remembered as a landmark in the history of mankind. Unlike most of the world happenings, this occurrence affects equally every civilized nation on the globe, and it is necessary, therefore, that everybody should understand its meaning. The anniversary of this event has already been observed in many countries, and, like Christmas, the Eighteenth of May is destined to become a great international day, which will proclaim good will among all men.

In August, 1898, people all over the world were surprised by a letter which the Czar addressed to the nations that were represented at the Russian Court. This letter was an invitation to send delegates to a meeting which should consider what could be done to keep nations from going to war with each other. The Czar stated in his letter that, for the best welfare of the world, the nations ought to restrict themselves in the spending of such enormous sums of money for armies and navies.

THE CZAR'S PLAN FOR PEACE.

The Czar had been considering this matter for some time. He, however, was not the only ruler who had thought seriously about this condition of affairs, and his invitation to attend a peace conference met with unanimous response. Every Government invited accepted, and this included all the nations of Europe, 20 in number, 4 from Asia, and 2 in America, the United States and Mexico.

On account of the unique nature of the conference, the Czar thought it best not to hold it in the capital of any one of the Great Powers, where so many political interests are centered. He felt that this might hinder the work in which all the countries of the world were equally interested. Holland was selected as the country most admirably adapted for such a meeting. It was announced to the Governments that the Queen of the Netherlands would offer hospitality to the conference, and accordingly the Netherlands minister of foreign affairs sent out a formal invitation to the Governments to meet at The Hague.

THE YOUNG QUEEN'S INVITATION.

The young Queen, who was then only 18 years old, to show her appreciation of the honor conferred on her country, and of the deep meaning of the conference, placed at its disposal the most beautiful and historical building in the land. The conference was, therefore, held in the widely famed House in the Woods, formerly the summer residence of the royal family, situated in a very beautiful park about a mile from the city.

This was a most remarkable gathering, for each nation had sent its greatest statesmen. Then, too, it was the first time in the world's history that a peace conference had been held by the nations.

THE HOUSE IN THE WOODS.

When these one hundred delegates, representing 26 of the most important nations of the world, came together on the eighteenth of May, 1899, it was fitting that their meeting place should be noted in history, since they were destined to become the historic figures of a great event in world affairs. The large ballroom, known as the Orange Zaal, was designated for the general meetings. The walls and dome of this hall are covered with immense paintings. One of these, over the front entrance, represents Peace descending from Heaven, and apparently entering the hall. M. de Beaufort, the honorary president of the conference, referred to this in his opening address, and expressed the hope that Peace, having entered the hall, would go forth to bless the whole world. The other large rooms on the main floor, handsomely furnished with beautiful Chinese and Japanese hangings, with the walls and ceilings finely frescoed, were given up to committees, into which the whole conference was divided. Upstairs, there was a dining room, in which the Dutch Government served a most bounteous lunch to the delegates every working day of the conference.

TOPICS DISCUSSED.

Baron de Staal, head of the Russian delegation, was appropriately chosen president. Three main topics had been proposed for discussion, and these were assigned to three large committees. The first was in charge of the question of armaments. Though the Czar had called the conference chiefly to consider how the nations might be relieved from spending such vast sums of money for their armies and navies, the committee which had this matter in charge found that the time had not yet come for deciding this burning question. The nations, they thought, must first agree not to go to war before they could be induced to give up their implements of war. The committee, therefore, came to no positive agreement. They unanimously expressed the belief, however, that if the nations would stop spending such a large part of their incomes for armaments it would be a blessing to mankind. This was greatly to be desired, they said. They also expressed the hope that the Governments would study this question, so that they might come to some future agreement. The second committee, that on the laws of war, adopted new rules which make war on land less barbarous and extends the Red Cross to naval warfare.

CHOOSING AN UMPIRE.

The key to the whole subject, and that which became the most important part of the program, is how to end a dispute before war begins. Many differences between nations have been settled without war by calling in a third party, just as an umpire on the ball field is called upon to decide which side is in the right. Wouldn't it look ridiculous if the two teams in a ball game should, every time a disputed point arose, stop the game and go to fighting to settle the matter? And how would it look to the spectators to see the advantage given to a side merely because it was stronger in the fist scramble? And yet this is exactly what nations do which go to war to settle disputes. How stupid to think that might can settle who is in the right.

WAR NO LONGER NECESSARY.

These great statesmen at The Hague, who composed the third committee, recognized the folly of such a method of settling disputes and adopted a plan which encourages the nations to refer all their disputes to an umpire or arbiter—in other words, to submit their differences to arbitration. In fact, the plan which this committee adopted makes it absolutely unnecessary for nations to go to war with each other in the future. What an important plan. To save for the people of the world over $2,000,000,000 a year, not to speak of the suffering and misery which war always brings. In the nineteenth century more than 14,000,000 able-bodied men were sacrificed in war.

The committee on arbitration divided its work into three parts. It said, first, that if two nations have a dispute, serious enough to cause war, they might call in another nation or nations who would view the matter with them in an impartial light and thus try to bring about a friendly settlement. A further important statement was made—that one or more powers, strangers to the dispute, might, of their own free will, offer their assistance. This provision, called

"Special Mediation by Neutral Powers," certainly meant a great change in the attitude of nations toward each other.

THE PEACE OF PORTSMOUTH.

Before this rule was adopted any offer on the part of any nation to intercede or intervene between two powers at variance would have been considered an unfriendly act and would probably have occasioned jealous distrust. We can see how important this provision is by the action of President Roosevelt, who, during the war between Russia and Japan, invited these two powers to send delegates to a meeting which he hoped might bring about the end of one of the most terrible wars in history. During this conference, which was held in Portsmouth, N. H., and which ended in the Peace of Portsmouth, the peoples of the world looked on with interest and sympathy and it was the common hope that war should cease.

The second part of the plan, which the committee on arbitration adopted, stated that a useful method of avoiding war between nations might be to appoint committees composed of men from other countries, which should inquire into the disputed case. Such committees were called " International Commissions of Inquiry." For a long time the delegates discussed this matter, and it seemed almost as if they would come to no agreement. The act was finally approved, however, although it was stated that only those cases which had nothing to do with the honor or essential interests of a nation would be considered as coming under this rule.

THE " DOGGER BANK AFFAIR."

But six years after the conference adjourned, this provision enabled the powers of Great Britain and Russia to settle speedily and peacefully a grave dispute which had arisen between them. When, during the Russian-Japanese war, the Russian fleet fired on the British fishing vessels, there was great excitement in England. Before 1899 she might have plunged into war, for her honor had been touched. Her citizens had been fired on by a foreign fleet. But under this rule of inquiry, England could honorably refer this matter to an investigating committee. One was appointed, which proved that the Russian ship had mistaken the British fishing vessels for the Japanese fleet. The committee recommended that an indemnity of $350,000 be paid by the Russian Government to the families of the English fishermen. This was gladly done and both sides were satisfied with the outcome of this unhappy occurrence. The " Dogger bank affair," as this was called, will always be regarded as an important event in world affairs.

THE HAGUE COURT OF ARBITRATION.

But the crowning glory of the Committee on Arbitration, and, inneed, of the first peace conference, was the establishment of a court where nations in dispute could take their cases and have them tried, just as people living in the various countries can refer their controversies to the courts for settlement. This court was to be the umpire or arbiter, and, therefore, it was called the International Court of Arbitration. Since this is situated at The Hague, it is sometimes called The Hague Court of Arbitration. The importance of this court was well understood by those far-sighted statesmen, who adopted every measure possible which could make the court useful to nations. They passed a rule saying that it was the duty of each power to remind disputants that the court existed. This has well proved its worth, for since it was opened in April, 1901, eleven important cases of international controversy, representing nearly every great nation of the world, have been settled by its judges. The American people like to remember that it was the United States and Mexico that took the first case there.

THE HAGUE PALACE OF PEACE.

The future headquarters of the International Court of Arbitration is situated on the avenue leading from The Hague to Scheveningen. At present the passer-by sees nothing but a great forest of scaffolding, which is to be seen on the left, a little distance from the road. Among the scaffold poles, however, is rising the Palace of Peace, toward the erection and maintenance of which Mr. Andrew Carnegie gave the Netherlands Government the sum of $1,500,000. The corner stone of this building was laid at the time of the second Hague conference in 1907.

The use of this court has convinced the nations more and more that arbitration is the only sane and sensible way of settling international difficulties, and since the first Hague conference over a hundred agreements have been made between nations to submit certain classes of disputes to arbitration. Thirty-six nations have thus expressed their desire to use the court, while the United States is a party to twenty-five of these treaties.

GIFTS OF THE NATIONS.

All countries are contributing to the adornment of the palace. Great Britain gives the four stained-glass windows of the Great Court; France a picture by Besnard for this court, and Gobelins tapestries, designed by Luc O. Mercon, for the small; the Dutch Government a collection of paintings, by Ferdinand Bol, for a room over the Small Court and seven stained-glass windows for the staircase; Germany the monumental entrance gates to the grounds; Italy part of the marble for the corridor; Austria the bronze and crystal candelabra; Norway the granite for the entrance slopes; Sweden, granite for the basement and certain columns; Denmark the porcelain for the fountain in the courtyard; Switzerland the works of the clocks; Russia a jasper vase, over 11 feet high, for the central hall; the United States a large marble group representing the purpose of the building, "Peace through Justice," for the first landing of the staircase; Mexico, onyx for the staircase; Belgium (probably) the bronze doors of the building; and Japan some gold-embroidered tapestries for the room of the administrative council, which is paneled in wood from Brazil.

The laying out of the grounds, which will contribute much to the beauties of the palace, will be in the hands of Mr. Thomas H. Mawson, of London, whose design shows a judicious blending of formal vistas with the natural beauties of the wood.

THE ARBITRATION TREATIES NEGOTIATED BY THE UNITED STATES WITH GREAT BRITAIN AND FRANCE.

The arbitration treaties negotiated by the United States with Great Britain and France enlarge the field of arbitrable subjects embraced in the treaties ratified by the three Governments in 1908. The treaties provide for reference to The Hague, or a similar tribunal, questions which have heretofore been left entirely to diplomatic negotiation. They provide for the creation of a Joint High Commission, to which shall be referred any controversy between this Government, on the one hand, and Great Britain or France, on the other, before such controversy has been submitted to an arbitral body from which there is no appeal. Moreover, the treaties provide that reference of a controversy to the Joint High Commission may be deferred for one year, thus allowing diplomatic adjustment without an appeal to the commission.

The Joint High Commission, according to the treaties, consists of three representatives from each Government concerned in the dispute. The commission is empowered to report to the respective Governments its recommendations and conclusions, and then the matter is ready for final arbitration. The Senate of the United States, concurring with the President, has the power to determine for this country if the case shall go to The Hague Court. Thus, under these treaties, the United States may go directly to the Court of Arbitration at The Hague or to the Joint High Commission. The report of this commission is not binding, except where opinions differ as to whether or not the question at issue is subject to arbitration under the first article of the treaties. If such is the case, five out of six members of the commission must so decide and the verdict is conclusive upon both Governments.

THE SECOND PEACE CONFERENCE.

The results of the first peace conference are far greater than the world ever dreamed of. And perhaps the greatest result of all was the calling of a second peace congress, which was held in 1907, and which included practically all the nations of the world.

Fourteen decisions were agreed upon by this conference, but the most important was the one which concerned the Hague Court. This world umpire, situated at The Hague, had shown its ability to settle any dispute that might arise between nations; but the second peace conference made this doubly assured. These statesmen decided that, in case of a conflict between two powers, either of them might go to the court and ask to have the difference settled, even though the other were unwilling to have the case referred. This was indeed a great improvement over the rule made by the first peace conference, which compelled both nations to agree to submit their difference to the court before it could be tried. Our American delegates at The Hague, who brought this matter up, believed that no nations would refuse to allow the case to go before the court when the request of the other was thus made public to the whole world.

A SUPREME COURT OF THE WORLD.

Our American delegates in the second Hague conference urged very strongly the establishment of a permanent international court, which should be to the nations of the world what our Supreme Court is to the States of the United States. Eight years before, at the first peace conference, the delegates thought that it would be perfectly impracticable to have such a court, but this conference decided unanimously that it was not only practicable but very desirable. Everything was agreed upon which should make the court a reality except the method of selecting judges. This matter will undoubtedly be settled before long. As Ambassador Choate and Secretary Hay said in their report to the United States Government, " a little time, a little patience, and the great work is accomplished."

THE THIRD PEACE CONFERENCE.

Perhaps the greatest service which the second peace conference gave to the world was its decision in favor of holding regular conferences. This not only laid the foundation for a Parliament of the Nations, which has been the dream of poets and statesmen for the past three centuries, but, by its vote providing for a third conference, it has really started the most important institution in promoting the peace of the world. It was Secretary Root who first proposed that the second conference should arrange for the holding of regular ones in the future, and as the vote was passed, a third peace conference will probably convene in the summer of 1915.

THE HAGUE TRIBUNAL.

ADMINISTRATIVE COUNCIL.

President—The minister of foreign affairs of the Netherlands.

Members—The diplomatic representatives of the signatory powers accredited to The Hague.

MEMBERS OF THE COURT.

The court consists of a panel of 130 eminent jurists appointed by 40 sovereign countries, each country appointing from one to four members. The judges in any given case are selected from this list.

The members from the United States are—

John W. Griggs, formerly Attorney General of the United States.

George Gray, United States Circuit Judge, formerly United States Senator.

Oscar S. Straus, formerly Secretary of Commerce and Labor, ambassador extraordinary and plenipotentiary at Constantinople.

The countries represented are—

1. Argentina.
2. Austria-Hungary.
3. Belgium.
4. Bolivia.
5. Brazil.
6. Bulgaria.
7. Chile.
8. China.
9. Colombia.
10. Cuba.
11. Denmark.
12. Dominican Republic.
13. Ecuador.
14. France.
15. Germany.
16. Great Britain.
17. Greece.
18. Guatemala.
19. Hayti.
20. Holland.
21. Italy.
22. Japan.
23. Luxemburg.
24. Mexico.
25. Nicaragua.
26. Norway.
27. Peru.
28. Persia.
29. Portugal.
30. Roumania.
31. Russia.
32. Salvador.
33. Servia.
34. Spain.
35. Sweden.
36. Switzerland.
37. Turkey.
38. United States.
39. Uruguay.
40. Venezuela.

THE NOBEL COMMITTEE.

The Nobel Committee consists of five members of the Norwegian Parliament, and this committee determines each year who shall receive the forty-thousand-dollar prize left by the will of Alfred Nobel, the inventor of dynamite, to be given to the man or woman who has done the most for peace during the year. The award is made each year on December 10, the date of the founder's death. The prize winners thus far are:

1901—Henri Dunant, Swiss, and Frederic Passy, French.

1902—E. Ducommun and A. Gobat, both Swiss.

1903—W. R. Cremer, English.
1904—The Institution of International Law, the first award to an institution.
1905—Baroness von Suttner, Austrian.
1906—President Theodore Roosevelt, American.
1907—Ernesto Teodoro Moneta, Italian, and Louis Renault, French.
1908—K. P. Arnoldson, Swede, and M. F. Bajer, Dane.
1909—Baron d'Estournelles de Constant, French, and Auguste Beernaert, Belgian.
1910—The International Peace Bureau, at Berne.
1911—Tobias Michael Carel Asser, Belgian, and Alfred Fried, Austrian.

THE INTERPARLIAMENTARY UNION.

The Interparliamentary Union was founded in 1888 by the English carpenter, William Randall Cremer, since crowned with the Nobel peace prize. It is open to all men who have been members of national parliaments. It deals primarily with questions of international law and peace. It has met almost every year since it was founded, and its proceedings have ever been a source of inspiration to the world statesman and peace advocate. It is responsible, directly or indirectly, for the calling of both the first and second Hague conferences. It now has a membership of some three thousand; and when it is remembered that there are only about fifteen thousand legislators who sit in the national parliaments of the world, it is seen that already one in every five is committed to the peace idea. Should the union grow anywhere near so fast in the future as it has grown in the past, it will not be a very long time before the nations can, if they desire, actually vote peace on earth. Over two hundred members of the United States Congress are now represented in the Interparliamentary Union, and Mr. Richard Bartholdt, of Missouri, is chairman of the American group.—Hamilton Holt, in The World's Work, March, 1911.

THE CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE.

Through the great benefaction of Mr. Andrew Carnegie, who has transferred to a board of trustees bonds valued at $11,500,000 as a permanent fund for the promotion of peace, the world has now in its possession a powerful engine for the accomplishment of world peace. This endowment furnishes the means for a systematic effort to reach the public opinion of the world by scientific argument and exposition.

The trustees of the endowment are to carry on their work in three divisions: International law, Economics and history, and Intercourse and education. These three divisions represent the juristic, the economic, and the educational aspects of the problem. The division of international law is under the direction of James Brown Scott; the second division under John Bates Clark, of Columbia University; and the third has, as acting director, Nicholas Murray Butler.

EDUCATIONAL WORK FOR PEACE.

At the Mohonk Conference of 1905 Dr. Daniel C. Gilman initiated a movement for the introduction of peace propaganda into colleges and universities. At the conference of that year a committee on colleges and universities was appointed, of which Benjamin Ide Wheeler, E. A. Alderman, James B. Angell, Seth Low, L. Clark Seelye, and Andrew D. White are members. The correspondence with colleges has been carried on by H. C. Phillips, corresponding secretary of the Mohonk Conference. Through the influence of this committee, over 250 colleges and universities are observing Peace Day, several are giving special lectures on the peace movement, and many have arranged for debates and oratorical contests on the subject.

The Intercollegiate Peace Association, due to the initiative of President Byers, of Goshen College, and Prof. Russell, of Earlham College, is composed of representatives of about 70 colleges and universities of the Middle West, "united for the promotion of organized activities among the students and educators in support of the international arbitration and peace movement." The main work of the association consists of intercollegiate and interstate oratorical contests for prizes upon subjects representing different phases of the question of international peace.

A very important movement is that represented by the National Association of Cosmopolitan Clubs, which had its beginning in 1903 at the University of Wisconsin. At that time an International Club, composed of 16 foreign and 2 native students, was formed. In 1907 the National Association of Cosmopolitan Clubs was organized for the purpose of "bringing closer together men from different countries to learn the customs, viewpoints, and characteristics of other nationalities, to remove national prejudices, and to establish international friendships." To-day there are over 30 of these clubs, representing as many colleges. In these clubs the membership consists of not more than one-half American students, and in some cases 20 or more nations are represented in the foreign membership.

The American School Peace League was the outcome of the First National Peace Congress, held in New York in 1907. At this congress a young people's meeting was held, consisting of about five thousand delegates from the public and private schools of New York City. William H. Maxwell presided, and addresses were made by Baron d'Estournelles de Constant, of the French Senate; William T. Stead, of London; William H. Maxwell, and Nathan C. Schaeffer. At the close of the meeting a committee was appointed to work out a plan to interest teachers in the general international movement. The final result of the committee's action was the American School Peace League, which was organized in 1908. Its aim is "to promote, through the schools and the educational public of America, the interests of international justice and fraternity."

The league is organized on the basis of State branches, numbering 28, which hold their annual meetings at the time of the conventions of the State teachers' associations. In some of the States branches have been formed in high and normal schools and colleges. These branches usually hold their annual meetings near the Eighteenth of May, and in many cases provide the program for the Eighteenth of May observance.

The following is the plan for State branch work adopted by the executive committee of the league:

1. To reach all educational gatherings and summer schools of the State with good speakers and the distribution of literature.
2. To reach the educational and daily press of the State, and to supply school papers with interesting articles.
3. To place peace literature in public, school, college, and traveling libraries; to encourage the organization of study circles for the purpose of working out practical helps for teachers; to include peace literature in study-circle lists.
4. To encourage superintendents to make history courses which shall have a broad and sympathetic world outlook.
5. To procure the observance of the Eighteenth of May.
6. To encourage the organization of branch leagues in high and normal schools.
7. To encourage orations and essays on international peace.

The interest in the promotion of the ideas of the league is not confined to this country. Ministers of education and prominent educators in most of the countries of Europe have indorsed the plans outlined in the league's activities and have expressed willingness to cooperate in a world-wide plan for developing international standards in teaching, especially the subject of history. The league has been active during the past two years in organizing an International Educational Council; and, resulting from the two European visits of the secretary, two representatives of the council have been secured in 12 different countries. The international exchange between the British teachers' associations and the National Education Association is a striking example of the trend of educational thought. In fulfilling the purpose of the resolution passed by the National Education Association last July, the secretary of the league was received by the various teachers' associations of Great Britain last autumn and met with the unanimous support of the project for an international council. Michael Sadler, former secretary of the board of education, and Sir James Yoxall, secretary of the National Union of Teachers of Great Britain and Ireland, are the two representatives from Great Britain. All cooperation, then, in this direction is a part of a world-wide plan for promoting international friendliness.

The method of the league is to secure the interest of teachers in the broad idea of international good will, and to stimulate their study of the events in world politics which affect the political status of the United States in international affairs. All this is founded on a deep-rooted sentiment against the ineffectiveness and the unreasonableness of war in settling international difficulties, and on the substitution of judicial procedure. This, in turn, has developed a new point of view in the interpretation of historical events, which places the emphasis in history teaching on the causes and results of wars rather than on the details of battles and military campaigns, and on the social and industrial conditions of life. It is this kind of teaching in the schools which the league, through its committee on teaching history, is urging. The second paragraph of the resolution which Miss Kate Stevens brought from the Teachers' Guild of Great Britain and Ireland expresses very well the principles of the American School Peace League in reference to teaching history:

> The council are convinced that teachers have more opportunities than any other persons of promoting and developing in the young the sense of brotherhood in the human race, toward which the United States and Great Britain are working, through the teaching of history, and look forward with much hope to the early coming of the time when, in all countries, the fostering of patriotism will be combined with the inculcation of a broad and sympathetic world outlook in the history lesson. In such a way only can the desirable spirit be generally diffused through all civilized peoples.

The league is also of the opinion that children old enough to study history should be taught the events connected with the two Hague conferences. These represent the initiation of official international agreements, leading specifically toward international conciliation. The principles which prompted and governed these congresses have so impressed themselves upon the social, economic, and political life of nations that from now on they must form an integral part of the education of the people. It is logical, therefore, that the course of study should include the teaching of these events which are really affecting the life for which the schools are preparing. The league therefore urges the observance in the schools by appropriate exercises, of the anniversary of the opening of the First Hague Conference (the Eighteenth of May) as a particularly fitting time for such teaching. This is especially desirable, since the Eighteenth of May is now observed by many organizations and institutions all over the world.

RESOLUTIONS PASSED BY NATIONAL EDUCATION ASSOCIATION.

San Francisco, July, 1911.

The very material advance made in the cause of world peace during the past year encourages the National Education Association to urge a more widespread dissemination of knowledge upon this vital subject. We commend the American School Peace League as a channel through which teachers may procure such knowledge, together with suggestions for its presentation. The league has done excellent work in collecting and organizing material which appeals both to children and to adults; the accuracy of its statements is not questioned; its arguments are sound. The proposal to establish a world tribunal to fill the place of an international court for civilized nations is worthy of commendation and should have the earnest support of all teachers.

* * * * * * *

The National Education Association expresses its heartiest recognition of greetings borne to its members by Miss Kate Stevens, head mistress of the Montem Street Central Council School, London; from the Teachers' Guild of Great Britain and Ireland; from the National Union of Teachers; from the London Teachers' Association; from the London Head Teachers' Association; and from the Child Study Society of England.

The members of the association return in kind these cordial professional greetings, and join with their fellow-teachers of Great Britain and Ireland in the wishes expressed for the promotion of international good will and the early establishment of agencies for the settlement of international difficulties by arbitration. Further, we do hereby accredit Mrs. Fannie Fern Andrews, of Boston, Mass., secretary of the American School Peace League, as the delegate representative of the National Education Association to bear our return greetings to the organizations whose greetings Miss Stevens has brought to us.

PEACE PRIZE CONTEST.

Under the auspices of

THE AMERICAN SCHOOL PEACE LEAGUE.

Open to pupils of all countries.

Two sets of prizes, to be known as the Seabury prizes, are offered for the best essays on one of the following subjects:

1. *The opportunity and duty of the schools in the international peace movement.* Open to seniors in the normal schools of the United States.
2. *The significance of the two Hague Peace Conferences.* Open to seniors in the secondary schools of the United States.

Three prizes of seventy-five, fifty, and twenty-five dollars will be given for the three best essays in both sets.

This contest is open for the year 1912 to the pupils of the secondary and normal schools in all countries.

AMERICAN JUDGES.

David Starr Jordan, president Leland Stanford Junior University, Palo Alto, Cal.

Randall J. Condon, superintendent of schools, Providence, R. I.

Miss Edith C. Westcott, principal Western High School, Washington, D. C.

Miss Anna J. McKeag, professor of education, Wellesley College, Wellesley, Mass.

E. C. Warriner, superintendent of schools, Saginaw, Mich.

Ebenezer Mackey, superintendent of schools, Trenton, N. J.

William H. Elson, former superintendent of schools, Cleveland, Ohio.

L. J. Abbott, department of American history, Central State Normal School, Edmond, Okla.

Charles E. Chadsey, superintendent of schools, Denver, Colo.

Endicott Peabody, head master Groton School, Groton, Mass.

EUROPEAN JUDGES.

Henri La Fontaine, senator of Belgium, Brussels, professor of international law, president of the International Peace Bureau at Berne.

Ferdinand Buisson, member of the Chamber of Deputies, Paris, honorary professor at the University of Paris, honorary director of primary education to the minister of public instruction, Paris.

Kirchenrat Kroner, Stuttgart, Germany.

Count Angelo de Gubernatis, professor at the University of Rome, Italy.

Emile Arnaud, president of the International League of Peace and Liberty, vice president of the International Peace Bureau, president of the International Educational Commission of the Universal Peace Congress, Luzarches, France.

Contest closes March 1, 1912.

CONDITIONS OF THE CONTEST.

Essays must not exceed 5,000 words (a length of 3,000 words is suggested as desirable), and must be written, preferably in typewriting, on one side only of paper, 8 by 10 inches, with a margin of at least 1¼ inches. Manuscripts not easily legible will not be considered.

The name of the writer must not appear on the essay, which should be accompanied by a letter giving the writer's name, school, and home address, and sent to Mrs. Fannie Fern Andrews, secretary American School Peace League, 405 Marlborough Street, Boston, Mass., not later than March 1, 1912. Essays should be mailed flat (not rolled).

The award of the prizes will be made at the annual meeting of the league in July, 1912.

Information concerning literature on the subject may be obtained from the secretary.

In 1911 95 essays were handed in from 28 States. The winners of the prizes follow:

NORMAL ESSAYS.

First prize—Matilda Srager, Plainfield, N. J.
Second prize—Inez P. Buxton, Plattsburg, N. Y.
Third prize—Beulah Peasley, Hortonville, Wis.

SECONDARY ESSAYS.

First prize—Harold A. Swank, Altoona, Pa.
Second prize—Louise Farrar Pennell, Seattle, Wash.
Third prize—Tully Stallard, Greenacres, Wash.

In addition to the above, the Lake Mohonk Conference on International Arbitration announced two sets of prizes to be awarded for similar work. These are as follows:

1. A first prize of $200 and a second prize of $100 for the best essays on "International Peace," by undergraduate women students of any college or university in the United States.
2. A prize of $100 for the best essay on "International Arbitration," by an undergraduate man student of any college or university of the United States or Canada.

Full information concerning the conditions of the contest may be obtained from the secretary of the conference, Lake Mohonk, N. Y.

COURSE OF STUDY IN GOOD WILL.

[Arranged by the committee on methods of the Massachusetts branch of the American School Peace League.]

Subjects for the year.	Grade I, companions and pets.	Grade II, home life.	Grade III, school and play time.	Grade IV, our town or city.	Grade V, our country.	Grade VI, good citizenship.	Grade VII, the world family.	Grade VIII, the larger patriotism.
September	Kindness to playmates.	Helpfulness	Loyalty	The influence of the home.	Heroic virtues of early settlers.	Sympathy and courtesy.	National characteristics.	Interdependence of nations.
October	Kindness to animals.	Obedience	Perseverance	The influence of the school.	The contribution of each race to American life.	Honesty	National flags and songs.	Conservation of life, health, and natural resources.
November	Responsibility for cleanliness and care.	Trustworthiness in work.	Ways of service	The care of public property.	Government by the people.	Courage to overcome difficulties.	What other nations have given to us.	Effects of war between nations.
December	The Christmas spirit.	Gratitude	Hospitality	The fireman and policeman.	The meaning of E Pluribus Unum.	Loyalty to truth	Each nation's gift to the world.	Moral substitutes for war.
January	Faithfulness	Other homes than ours.	Respect for authority.	Public health	The responsibility of each citizen.	Devotion	National philanthropy.	Men who have contributed to the progress of civilization.
February	Kindness of great men.	Childhood of great men.	Fair play	Obedience to community laws.	Our great statesmen.	Self-control	Friendliness among American Republics.	World congresses and conferences.
March	Generosity	Keeping your word.	Good work	Loyalty to public officials.	Social service	Regard for civic beauty.	National honor	Growth of law as an agency for promoting good will.
April	Kindness in manner.	Helpfulness to the old and feeble.	Cheerfulness under defeat and failure.	Good will among communities.	Patriotism	Everyday heroes	Justice and honor between nations.	Treaties and arbitration.
May	Quarreling and making peace.	Peace among the children.	Peace in the playground.	Good will among all classes of citizens.	Friendships with other nations.	Heroes of peace	The Hague conferences.	Peace and good will through federation.
June	Protection and care of plants and flowers.	The golden rule	Working together.	How can we help our community.	How can we serve our country.	The working members of society.	Our obligations to other nations.	The united world.

CURRENT LITERATURE IN THE STUDY OF THE INTERNATIONAL PEACE MOVEMENT.

Literature may be obtained from the associations given below:

World Peace Foundation, 29A Beacon Street, Boston, Mass.

American Association for International Conciliation, Substation 84, New York City.

American Peace Society, 313–314 Colorado Building, Washington, D. C.

Maryland Peace Society, 1925 Park Avenue, Baltimore, Md.

American School Peace League, 405 Marlborough Street, Boston, Mass.

TUBAL CAIN.

Old Tubal Cain was a man of might,
In the days when earth was young;
By the fierce red light of his furnace bright,
The strokes of his hammer rung;
And he lifted high his brawny hand
On the iron glowing clear,
Till the sparks rushed out in scarlet showers,
As he fashioned the sword and spear.
And he sang—"Hurrah for my handiwork!
Hurrah for the spear and sword!
Hurrah for the hand that shall wield them well,
For he shall be king and lord!"

To Tubal Cain came many a one,
As he wrought by his roaring fire,
And each one prayed for a strong steel blade,
As the crown of his desire;
And he made them weapons sharp and strong,
Till they shouted loud for glee;
And they gave him gifts of pearls and gold,
And spoils of the forest free.
And they sang—"Hurrah for Tubal Cain,
Who hath given us strength anew!
Hurrah for the smith, hurrah for the fire,
And hurrah for the metal true!"

But a sudden change came o'er his heart,
Ere the setting of the sun;
And Tubal Cain was filled with pain
For the evil he had done;
He saw that men, with rage and hate,
Made war upon their kind,
That the land was red with the blood they shed,
In their lust for carnage blind.
And he said, "Alas! that I ever made,
Or that skill of mine should plan,
The spear and the sword for men whose joy
Is to slay their fellow-man!"

And for many a day old Tubal Cain
  Sat brooding o'er his woe;
And his hand forebore to smite the ore,
  And his furnace smoldered low.
But he rose at last with a cheerful face,
  And a bright courageous eye,
And bared his strong right arm for work,
  While the quick flames mounted high.
And he sang—"Hurrah for my handiwork!"
  And the red sparks lit the air;
"Not alone for the blade was the bright steel made,"
  And he fashioned the first plowshare.

And men, taught wisdom from the past,
  In friendship joined their hands;
Hung the sword in the hall, the spear on the wall,
  And plowed the willing lands:
And sang—"Hurrah for Tubal Cain!
  Our staunch good friend is he;
And for the plowshare and the plow,
  To him our praise shall be."

—CHARLES MACKAY.

A VISION OF THE FUTURE.

For I dipt into the future, far as human eye could see,
Saw the vision of the world, and all the wonder that would be;

Saw the heavens fill with commerce, argosies of magic sails,
Pilots of purple twilight, dropping down their costly bales;

Heard the heavens fill with shouting, and there rained a ghastly dew
From the nation's airy navies grappling in the central blue;

Far along the world-wide whisper of the south wind rushing warm,
With the standards of the peoples plunging thro' the thunder-storm;

Till the war-drum throbb'd no longer, and the battle-flags were furl'd
In the Parliament of man, the Federation of the world.

There the common sense of most shall hold a fretful realm in awe,
And the kindly earth shall slumber, lapt in universal law.

—Locksley Hall, ALFRED TENNYSON.

THE ARSENAL AT SPRINGFIELD.

This is the Arsenal. From floor to ceiling,
  Like a huge organ, rise the burnished arms;
But from their silent pipes no anthem pealing
  Startles the village with strange alarms.

Ah! what a sound will rise, how wild and dreary,
  When the death-angel touches those swift keys;
What loud lament and dismal Miserere
  Will mingle with their awful symphonies.

I hear even now the infinite fierce chorus,
  The cries of agony, the endless groan,
Which, through the ages that have gone before us,
  In long reverberations reach our own.

* * * *

Is it, O man, with such discordant noises,
  With such accursed instruments as these,
Thou drownest Nature's sweet and kindly voices,
  And jarrest the celestial harmonies?

Were half the power that fills the world with terror,
  Were half the wealth bestowed on camps and courts,
Given to redeem the human mind from error,
  There were no need of arsenals or forts.

The warrior's name would be a name abhorred!
  And every nation that should lift again
Its hand against a brother, on its forehead
  Would wear forevermore the curse of Cain!

Down the dark future, through long generations,
  The echoing sounds grow fainter and then cease;
And like a bell, with solemn, sweet vibrations,
  I hear once more the voice of Christ say, "Peace!"

Peace! and no longer from its brazen portals
  The blast of War's great organ shakes the skies!
But beautiful as songs of the immortals,
  The holy melodies of love arise.

—HENRY W. LONGFELLOW.

Put off, put off your mail, ye kings, and beat your brands to dust,
A surer grasp your hands must know, your hearts a better trust;
Nay, bend aback the lance's point, and break the helmet bar,
A noise is in the morning's winds, but not the noise of war.
Among the grassy mountain paths the glittering troops increase—
They come! They come!—how fair their feet!—they come that publish peace!
Yea, Victory! fair Victory! our enemies', and ours,
And all the clouds are clasped in light, and all the earth with flowers.
Ah! still depressed and dim with dew, but yet a little while,
And radiant with the deathless rose the wilderness shall smile,
And every tender living thing shall feed by streams of rest,
Nor lamb from the fold be lost, nor nursling from the nest.

—JOHN RUSKIN.

A HYMN OF PEACE.

(May be sung to the music of Kellar's American Hymn. It was sung to this music at the "Jubilee," June 15, 1869.)

Angel of Peace, thou hast wandered too long;
  Spread thy white wings to the sunshine of love!
Come while our voices are blended in song,
  Fly to our ark like the storm-beaten dove!
Fly to our ark on the wings of the dove,
  Speed o'er the far-sounding billows of song,
Crowned with olive-leaf garland of love,
  Angel of Peace, thou has waited too long!

Joyous we meet on this altar of thine,
  Mingling the gifts we have gathered for thee,
Sweet with the odors of myrtle and pine,
  Breeze of the prairie and breath of the sea;
Meadow and mountain and forest and sea—
  Sweet is the fragrance of myrtle and pine,
Sweeter the incense we offer to thee,
  Brothers, once more this altar of thine!

Angels of Bethlehem, answer the strain!
  Hark! a new birth-song is filling the sky!
Loud as the storm-wind that tumbles the main
  Bid the full breadth of the organ reply;
Let the loud tempest of voices reply
  Roll its long surge like the earth-shaking main,
Swell the vast song till it mounts to the sky!
  Angels of Bethlehem, echo the strain!

—OLIVER WENDELL HOLMES.

HEROES IN TIMES OF PEACE.

'Twas said: "When roar of drum and battle's roar
Shall cease upon the earth, O, then no more
The deed, the race of heroes in the land."
But scarce that word was breathed when one small hand
Lifted victorious o'er a giant wrong
That had its victims crushed through ages long;
Some woman set her pale and quivering face,
Firm as a rock, against a man's disgrace;
A little child suffered in silence lest
His savage pain should wound a mother's breast;
Some quiet scholar flung his gauntlet down
And risked, in Truth's great name, the synod's frown;
A civic hero, in the calm realm of laws
Did that which suddenly drew a world's applause;
And one to the pest his lithe young body gave
That he a thousand thousand lives might save.

—Selected.

THE BETTER WAY.

Who serves his country best?
Not he who, for a brief and stormy space,
Leads forth her armies to the fierce affray.
Short is the time of turmoil and unrest,
Long years of peace succeed it and replace:
There is a better way.

Who serves his country best?
Not he who guides her senates in debate,
And makes the laws which are her prop and stay;
Not he who wears the poet's purple vest
And sings her songs of love and grief and fate:
There is a better way.

He serves his country best
Who joins the tide that lifts her nobly on,
For speech has myriad tongues for every day
And song but one; and law within the breast
Is stronger than the graven law on stone:
This is a better way.

He serves his country best
Who lives pure life, and doeth righteous deed,
And walks straight paths—however others stray—
And leaves his sons as uttermost bequest
A stainless record which all men may read:
This is the better way.

No drop but serves the slowly lifting tide,
No dew but has an errand to some flower,
No smallest star but sheds some helpful ray,
And man by man, each giving to all the rest,
Makes the firm bulwark of the country's power:
There is no better way.

—SUSAN COOLIDGE.

When earth as on some evil dreams,
Looks back upon her wars,
And the white light of Christ outstreams,
From the red disk of Mars,
His fame who led the stormy van
Of battle well may cease,
But never that which crowns the man
Whose victory is peace.

—JOHN GREENLEAF WHITTIER.

THE FATHERLAND.

Where is the true man's fatherland?
  Is it where he by chance is born?
  Doth not the yearning spirit scorn
In such scant borders to be spanned?
Oh yes! his fatherland must be
As the blue heaven wide and free!

Is it alone where freedom is,
  Where God is God and man is man?
  Doth he not claim a broader span
For the soul's love of home than this?
Oh yes! his fatherland must be
As the blue heaven wide and free!

Where'er a human heart doth wear
  Joy's myrtle-wreath or sorrow's gyves,
  Where'er a human spirit strives
After a life more true and fair,
There is the true man's birthplace grand,
His is a world-wide fatherland!

Where'er a single slave doth pine,
  Where'er one man may help another—
  Thank God for such a birthright, brother—
That spot of earth is thine and mine!
There is the true man's birthplace grand,
His is a world-wide fatherland!

—James Russell Lowell.

RING OUT THE OLD, RING IN THE NEW.

Ring out the old, ring in the new,
  Ring, happy bells, across the snow;
  The year is going, let him go;
Ring out the false, ring in the true.

Ring out the want, the care, the sin,
  The faithless coldness of the times;
  Ring out, ring out my mournful rhymes,
But ring the fuller minstrel in.

Ring out false pride in place and blood,
  The civic slander and the spite;
  Ring in the love of truth and right,
Ring in the common love of good.

Ring out a slowly-dying cause,
  And ancient forms of party strife;
  Ring in the nobler modes of life,
With sweeter manners, purer laws.

Ring out old shapes of foul disease;
  Ring out the narrowing lust of gold;
  Ring out the thousand wars of old,
Ring in the thousand years of peace.

Ring in the valiant man and free,
  The larger heart, the kindlier hand;
  Ring out the darkness of the land,
Ring in the Christ that is to be.

—ALFRED TENNYSON.

THE CHERRY FESTIVAL AT NAUMBURG.

(*A ballad founded on fact.*)

Hard by the walls of Naumburg town,
  Four hundred years ago,
Procopius his soldiers led
  To fight their Saxon foe.
The blue sky bent above the earth
  In benediction mute;
The tranquil fields reposed content
  In blossom, grain, and fruit.

But vain the benedicite
  Of tender, brooding sky;
And vainly peaceful, smiling fields
  Gave eloquent reply.
Unsoothed, unmoved, in nature's calm,
  The Hussite army lay,
A deadly, threatening human storm,
  With Naumburg in its way.

To swift destruction now seemed doomed
  The dear old Saxon town;
Before Procopius the Great
  The strongest walls went down.
But soon upon the soft, calm air,
  Came sound of tramping feet;
The Hussites quickly flew to arms,
  Their hated foe to meet.

Ready they stood to face the charge;
  The great gate opened wide,
And out there poured, not armed men,
  But, marching side by side,
The little children of the town,
  Whose bright eyes met their gaze
With innocence and courage all
  Unversed in war's dread ways.

The men threw all their weapons down
  At sight so strange and fair;
They took the children in their arms,
  They stroked their flaxen hair,
They kissed their cheeks and sweet red lips,
  They told how back at home
They'd left such little ones as these,
  And then they bade them come.

To cherry orchards close at hand,
  And there they stripped the trees
Of branches rich with clustered fruit;
  Their little arms with these
They filled, and with kind words of peace
  They sent them back to town.
The soldiers then all marched away,
  Nor thought of war's renown.

And now each year at cherry time,
  In Naumburg you may see
The little children celebrate
  This strange, sweet victory.
Once more the sound of tramping feet
  Is heard as, side by side,
They march throughout the quaint old town,
  In childhood's joyous pride.

Once more they bear within their arms
  Green branches, thro' whose leaves
Ripe cherries gleam, that tell a tale
  More strange than fancy weaves,
About a bloodless battle fought
  Four centuries ago,
When children saved old Naumburg town
  By conquering its foe.

RECESSIONAL.

God of our fathers, known of old—
Lord of our far-flung battle line—
Beneath whose awful Hand we hold
Dominion over palm and pine—
Lord God of Hosts, be with us yet
Lest we forget—lest we forget!

The tumult and the shouting dies—
The Captains and the Kings depart—
Still stands Thine ancient Sacrifice,
An humble and a contrite heart.
Lord God of Hosts, be with us yet,
Lest we forget—lest we forget!

Far-called our navies melt away—
On dune and headland sinks the fire—
Lo, all our pomp of yesterday
Is one with Nineveh and Tyre!
Judge of the Nations, spare us yet,
Lest we forget—lest we forget!

If, drunk with sight of power, we loose
Wild tongues that have not Thee in awe—
Such boasting as the Gentiles use,
Or lesser breeds without the law—
Lord God of Hosts, be with us yet,
Lest we forget—lest we forget!

For heathen heart that puts her trust
In reeking tube and iron shard—
All valiant dust that builds on dust,
And guarding calls not Thee to guard—
For frantic boasts and foolish word,
Thy mercy on Thy people, Lord.

—Rudyard Kipling.

THESE THINGS SHALL BE.

These things shall be! A loftier race
Than e'er the world hath known shall rise,
With flame of freedom in their souls
And light of knowledge in their eyes.

They shall be gentle, brave, and strong,
Not to spill human blood, but dare
All that may plant man's lordship firm
On earth and fire and sea and air.

Nation with nation, land with land,
Unarmed shall live as comrades free;
In every human heart and brain shall throb
The pulse of one fraternity.

New arts shall bloom, of loftier mould,
And mightier music thrill the skies;
And every life shall be a song,
When all the earth is paradise.

There shall be no more sin nor shame,
And wrath and wrong shall fettered lie;
For man shall be at one with God
In bonds of firm necessity.

OH, BEAUTIFUL, MY COUNTRY.

(Tune: Webb.)

Oh, Beautiful, my country,
Be thine a nobler care
Than all the wealth of commerce,
Thy harvests waving fair;
Be it thy pride to lift up
The manhood of the poor;
Be thou to the oppressed
Fair Freedom's open door!

For thee our fathers suffered;
For thee they toiled and prayed;
Upon thy holy altar
Their willing lives they laid.
Thou hast no common birthright;
Grand memories on thee shine;
The blood of pilgrim nations
Commingled flows in thine.

Oh, Beautiful, our country,
Round thee in love we draw;
Thine is the grace of freedom,
The majesty of law.
Be righteousness thy scepter,
Justice thy diadem;
And in thy shining forehead
Be peace the crowning gem.

HEAR, O YE NATIONS.

(Written for the Second National Peace Congress.)

(Tune: Lyons.)

Hear, hear, O ye Nations, and hearing obey
The cry from the past and the call of to-day!
Earth wearies and wastes with her fresh life outpoured,
With glut of the cannon, and spoil of the sword.

A new era opens, transcending the old,
It calls for new leaders, for new ranks unrolled;
For war's grim tradition it maketh appeal,
To service of man in the world's commonweal.

The workers afield, in the mill and the mart,
In commerce, in council, in science and art,
Shall bring of their gifts and together create,
The manifold life of the firm-builded State.

And more shall the triumph of right over wrong,
Be shield to the weak and a curb to the strong.
When counsel prevails and, the battle flags furled,
The High Court of Nations gives law to the world.

And Thou, O my Country, from many made one,
Last-born of the nations, at morning Thy sun,
Arise to the place Thou art given to fill,
And lead the world-triumph of peace and good will.

—Frederick L. Hosmer.

NATIONAL HYMN.

God of our fathers, whose almighty hand
Leads forth in beauty all the starry band
Of shining worlds in splendor through the skies,
Our grateful songs before Thy throne arise.

Thy love divine hath led us in the past,
In this free land by Thee our lot is cast;
Be Thou our ruler, guardian, guide, and stay,
Thy word our law, Thy paths our chosen way.

From war's alarms, from deadly pestilence,
Be Thy strong arm our ever-sure defence;
Thy true religion in our hearts increased,
Thy bounteous goodness nourish us in peace.

Refresh Thy people on their toilsome way,
Lead us from night to never-ending day;
Fill all our lives with love and grace divine,
And glory, laud, and praise be ever Thine.
Amen.

QUOTATIONS.

There are two ways of ending a dispute—discussion and force; the latter manner is simply that of the brute beasts; the former is proper to beings gifted with reason. —Cicero.

If there is in the affairs of mortal men any one thing which it is proper to explode, and incumbent upon every man by every lawful means to avoid, to deprecate, to oppose, that one thing is, doubtless, war. —Erasmus.

Our country is not the only thing to which we owe our allegiance. It is also owed to justice and to humanity. Patriotism consists not in waving a flag, but in striving that our country shall be righteous as well as strong.
—James Bryce.

New occasions teach new duties; time makes ancient good uncouth;
They must upward still, and onward, who would keep abreast with Truth;
Lo, before us gleam her camp fires! we ourselves must pilgrims be,
Launch our Mayflower, and steer boldly through the desperate winter sea,
Nor attempt the Future's portal with the Past's blood-rusted key.
—James Russell Lowell.

Let us thank God that we live in an age when something has influence besides the bayonet. —Daniel Webster.

The more you reduce the burdens of the people in times of peace, the greater will be your strength when the hour of peril comes. —Benjamin Disraeli.

The era of true peace on earth will not come so long as a tremendous percentage of your taxes goes to educate men in the trades of slaughter.
—Reginald Wright Kaufman.

The more I study the world the more am I convinced of the inability of force to create anything durable. —Napoleon, at St. Helena.

War will eliminate itself. By the next centennial, arbitration will rule the world. —General Sheridan, in 1876.

If the press of the world would adopt and persist in the high resolve that war should be no more, the clangor of arms would cease. —John Hay.

My first wish is to see the whole world at peace and the inhabitants of it as one band of brothers, striving which should contribute most to the happiness of mankind. —George Washington.

All wars are follies, very expensive and very mischievous ones. In my opinion, there never was a good war or a bad peace. When will mankind be convinced and agree to settle their difficulties by arbitration?
—Benjamin Franklin, in 1783.

I recoil with horror at the ferociousness of man. Will nations never devise a more rational umpire of differences than force? Are there no means of coercing injustice more gratifying to our nature than a waste of the blood of thousands and of the labor of millions of our fellow creatures?
—Thomas Jefferson

I confess without shame that I am tired and sick of the war. Its glory is all moonshine. Even success the most brilliant is over dead and mangled bodies, the anguish and lamentation of distant families appealing to me for missing sons, husbands, and fathers. It is only those who have not heard a shot nor heard the shrieks and groans of the wounded and lacerated that cry aloud for more blood, more vengeance, more desolation. —General SHERMAN.

Let the soldier be abroad if he will, he can do nothing in this age. There is another personage—a personage less imposing in the eyes of some, perhaps insignificant. The schoolmaster is abroad, and I trust to him, armed with his primer, against the soldier in full military array. —Lord BROUGHAM.

In medieval times France and England knew the horrors of a hundred years' war. The time is not far distant when they will be able to celebrate the completion of a hundred years' peace.
—Ambassador JUSSERAND, at the Lake Champlain Tercentenary.

He who by voice or pen strikes his best blow at the impostures or vices whereby our race is debased and paralyzed may close his eyes in death, consoled and cheered by the reflection that he has done what he could for the emancipation and elevation of his kind. —HORACE GREELEY.

The Hague treaty stands for the arbitration of all difficulties between nations without exception. It is not generally known how broad and important an instrument it is. I regard it as the triumph of the nineteenth century that the nations could come together at its end and make a treaty like that. The tribunal has advanced more rapidly than did the Supreme Court of the United States in the first five years of its existence. * * * In the future, instead of the barbarous cry "To arm. To arms!" we shall hear another cry: "To The Hague. To The Hague." —OSCAR S. STRAUS.

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COUNTRY SCHOOLS FOR CITY BOYS

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
Washington, D. C., March 29, 1912.

SIR: In our efforts to improve our schools in America and to adapt them to the varying needs of children many thoughtful people have felt the need of giving to city schools a better environment than they usually have on our crowded streets, with scant playgrounds, if any at all. Several years ago Dr. Preston W. Search, in his book *An Ideal School*, suggested that all the schools of the city should be brought together in one or more great school parks, with ample grounds for buildings, which should be only one story high, with playgrounds and space for grass and trees. He suggested that these school parks might be located away from the centers of the cities—probably in the suburbs, where land could be had at less cost than in the business and residence sections. Other similar suggestions have been made, but for the masses of the children in the crowded sections of our cities this problem still remains unsolved.

However, what the public at large has failed to accomplish for all the children private individuals have been able to accomplish for a few of the more fortunate. The idea of the country school for city children, supported by private tuition and private means, as worked out practically at Baltimore, has extended in some degree to all parts of the country and will probably become quite common. The story of this movement, as told by Dr. William Starr Myers in the accompanying manuscript, is both interesting and suggestive and should be known to all who are working for the betterment of the material conditions of schools for city children. I therefore recommend that this manuscript be published as a bulletin of this bureau and would call especial attention to the suggestions made by Dr. Myers as to the possibility of applying this principle to the public schools. It is quite easy to see how this might be done for the public high schools, at least of most cities, with little or no additional cost to the public for buildings, grounds, and equipment, or to individual parents and children for transportation.

It has frequently happened in the history of education in this and other countries that movements for the betterment of the public schools have begun in a small way with private schools as the result of the enthusiasm and earnestness of only a few individuals. It is sincerely hoped that this movement, begun at Baltimore in a private way and already extended to a dozen cities, may become a great national movement for the betterment of the public schools, in which the great masses of children are educated.

Very respectfully,
P. P. CLAXTON,
Commissioner.

The SECRETARY OF THE INTERIOR.

COUNTRY SCHOOLS FOR CITY BOYS.

BACK TO THE COUNTRY.

"Back to the country" is the cry of the advocates of one of our sanest philanthropic movements. To free thousands of our best citizens from the unwholesome and harmful influences of crowded houses, poor light, and bad air, and to restore them to the open fields, a freedom from unnatural restraints, and the blessings of God's sunshine, are objects worthy of the best efforts of the American people.

The average city resident of comfortable means is accustomed to think that such a movement is merely a charity designed to help the poorer and more unfortunate elements of our population, but as a matter of fact it is of vital interest to every man, woman, and child that lives in a large city. Unhealthful conditions of life do not affect merely the inmates of small houses on alleys and back streets, but spread, through inevitable contact, to the handsome establishments of the more favored neighborhoods; sooner or later the whole city is affected.

Realizing this fact, philanthropists have made an effort to find some means by which our boys who live in the city may spend at least the day in the country, and at the same time have the advantages of an education in the best schools. Some of our people of means, those who can afford the money necessary for an experiment, have hit upon a plan which has solved the problem, it is believed, and that is the plan of founding "country day schools for city boys." And girls, too, are going to be included among those who share the benefits of this movement.

Up to 15 years ago the only two possible things for the city family, if a healthful outdoor life was desired for the children, were to live at a country home six months of the year and each day send the children in town to school, or else to break all home ties for a large part of the year by sending the boys and girls away to boarding school. A group of men and women of intelligence and enterprise in Baltimore had the vision to see and the faith to act, and the Gilman Country School for Boys, founded in 1897, is the result.

OUR PAST EDUCATIONAL EXPERIENCE.

The educational history of our country, viewed from the standpoint of this latest development, is of especial interest. In the earliest times, when our people lived in a small fringe of settlements along the Atlantic seaboard, before the public school as we at present know it was more than a mere thought in the minds of our wise colonial forefathers, the so-called Latin or Grammar schools were founded. Among the earliest of these were the Boys' Latin School (1635) and the Roxbury Latin School (1645), of Boston, and the Penn Charter School (1698), of Philadelphia. They were all what we of the present would call "private" day schools, being "public" only in the sense that any citizen might send his boys to them if he could and would pay the necessary cost of tuition.

The students spent the morning at the school, rushed home to a hasty lunch or dinner, then hurried back to the second session of the day, with the frequent accompaniment of unsatisfied appetite or harmed digestion, but they had the saving favor of broad, open streets or vacant lots to play upon after school hours were over, at 4 or 5 o'clock in the afternoon. The work done in these schools, though of a sort that to-day might be deemed narrow and old-fashioned, was sound, and to that fact we owe the foundation of most of the culture and education in America to-day.

As time went on the cities gradually built up, becoming larger and more crowded. There were fewer vacant lots for young America to play upon, and in still later days even cable and electric cars were powerless to make continually accessible the open places necessary for exercise and fresh air. So much time was taken up in going to and from the "athletic fields," which the schools must now provide, that little chance was left for the good, long, hard play that is so necessary for the proper development of a healthy boy. The gymnasium was a new advantage, it is true, but at best it merely gave opportunity for exercise indoors or in bad weather, which was more like *work* than the healthful outdoor sports and games and had the added disadvantage of making exercise a *business*.

The public schools, as we know them to-day, were later established, and from them the old-style schools and academies differed little except in size and sometimes in equipment, or in the "exclusiveness" or "selectness" that the payment of tuition was supposed to give. Thoughtful parents were beginning to see the necessity of finding some way to keep their boys off the streets, and perhaps away from the bad associates of the hours out of school, and the only way open to them was that afforded by the boarding schools now springing up all over the country, many of them under church direction or influence. These are the institutions that are still so prominent in the educational life of the present day.

Exeter, Andover, Lawrenceville, St. James (Maryland), St. Paul's, St. Mark's, and many others were founded years ago, several of them having rounded out to-day a full century of existence. Their original purpose was mainly that of supplying an education for the boys of the small towns or country districts, for whom the day schools and academies, of which I have been speaking, were not available, and for whom the efficient high school, as we know it now, was still a thing of the future. These schools offered an opportunity that soon was grasped by the parents of the city boys, with the result that the old institutions grew at a remarkable rate, and new schools were founded all over the country. Groton, Pomfret, Hotchkiss, Hill, Asheville, Tome—all are among those dating from the period under discussion. To go away to a large boarding school of this type became the established custom.

Furthermore, the number and the popularity of our colleges and universities were increasing at the same time, and these schools were looked upon as the best means of acquiring a proper preparation for the more advanced education, with the result that they progressed in character and extent of training to a grade that has not yet been attained by the general average of other types of schools to-day.

The present status of college entrance requirements was another result. In the East our largest universities, such as Harvard, Yale, and Princeton, more often consult and adapt their entrance requirements to the wishes of these large boarding schools than to the desires of any other preparatory institutions. The reason is obvious. These schools not only supply a large percentage of the students entering college, but also by means of their excellent and thorough educational work have been a factor in raising the standard of preparation. Of course these conditions prevail to a less extent in the West, where the State universities dominate the educational field, and as heads of the public-school systems plan their requirements more nearly to meet the efforts of the high schools.

There is no question that a large boarding school offers great educational advantages to those boys whose fathers can afford to pay for them, through the excellence of its curriculum, the strength of its faculty (for it can afford to pay salaries high enough to attract some of the best teachers, who would otherwise be engaged in college work), its large and expensive equipment, and the facilities it offers for personal touch with the masters and a large and valuable acquaintance among boys from all over the country. But it has one serious drawback—it cuts off the boy from home when 12 or 15 years old, the very age of all others when he needs the influences centering around home and family, which are of greater importance than any other in the life of a normal, well-trained, healthy child. The influence of a teacher is tremendous, but at best it can only supplement and add to that of a conscientious father and tender mother. Realizing this difficulty, the country school was founded, and it bids fair to make on the educational history of our time a still greater mark than it has already made in the comparatively short time it has been in existence.

THE BALTIMORE EXPERIMENT.

The whole movement at Baltimore, Md., owes its beginning to Mrs. Francis K. Carey, wife of a prominent attorney of that city. Mrs. Carey, prompted by the wish for a proper school for her own child without separating him from the influences of home, worked out the idea of an all-day country school for city boys, perhaps combined with a boarding school, which would furnish the routine of an entire day in the country with study and sports alike under the teachers' direction. She discussed the matter with Mrs. William Cabell Bruce, and finally enlisted the interest of Dr. Daniel Coit Gilman, the lamented president of Johns Hopkins University, who together with Mr. Francis K. Carey, Mr. William Cabell Bruce, and the late Hon. William A. Fisher were so convinced of the advantages and sound common sense of the idea that they felt themselves justified in making a definite attempt to establish such a school.

In March, 1897, a commitee on organization was formed, which consisted of President Gilman and Prof. Herbert B. Adams, of Johns Hopkins University; Hon. Charles J. Bonaparte, Attorney General in President Roosevelt's Cabinet; Hon. William A. Fisher, Mr. William Cabell Bruce, Mr. William H. Buckler, and Mr. Francis K. Carey. This committee issued the following announcement:

> It is proposed to establish a country boarding and day school for boys, designed for the education of those boys whose parents wish them to be trained from the beginning of their school education under the best methods approved by modern educators and with surroundings which will protect their health and character. As far as possible, the school will aim to furnish to Baltimore boys the advantages which are now offered at the well-known boarding schools of the country without separating the boys, more than may be indispensable, from their parents. The school buildings will be located at some point in the suburbs of Baltimore, easily accessible by electric cars or steam railway. They will be properly equipped and furnished and will be surrounded by ample grounds.

In acordance with these plans a board of trustees was selected and a corporation formed under the title "The Country School for Boys of Baltimore City," a name that was changed recently to that of the "Gilman Country School for Boys," thus doing honor to the one of its founders who, with few possible exceptions, influenced education for good in this country more than any other American of the nineteenth century.

As the result of active effort under the leadership of Mr. Carey, in which nearly 200 men were interviewed, a fund of $12,000 was

"HOMEWOOD," BALTIMORE, MD. THE FIRST "COUNTRY SCHOOL FOR BOYS."

raised with which to make the experiment. Some 27 of the most prominent citizens of Baltimore, who subscribed the amount, are known as the "founders."

At the same time was secured for the school the Homewood estate, on Charles Street extended, situated near a street car line and about 2 miles from the center of the city. It contains a beautiful old residence of the best type of colonial architecture, which was built in 1803 by Charles Carroll, of Carrollton, for his son, Charles Carroll, jr., and the school had the use of some 12 acres of grounds in addition. The estate is located on one of the rolling hills back of the city, to the north, in a situation especially beautiful, the house standing some 245 feet above the level of Baltimore Harbor. In these healthful and beautiful surroundings the school was opened on September 30, 1897, Mr. Frederic Winsor, of Massachusetts, being the first head master.

Here the school remained for 13 years, a period of steady growth in spite of several small setbacks, due to change in active management and the usual difficulties inherent in any new undertaking. On October 4, 1910, it moved into its own property, situated in Roland Park, a charming suburb, located about 2 miles farther out from the city than Homewood. Here is a new and thoroughly equipped building, which has accommodations for 60 boarders and 150 day pupils. The grounds consist of 70 acres in woodland, lawns, and athletic fields, and the large field now in use is one of the finest in the State. All water used in the school is drawn from a sealed well, driven more than 250 feet through solid rock. The yield is more than 40 gallons a minute, and is pronounced by the State board or health to be absolutely pure. The total capital invested in this new plant is more than $300,000, of which $225,000 has been put into the building and the grading of grounds. Mr. Frank Woodworth Pine is the present head master.

The old Homewood estate is included in the tract presented to Johns Hopkins University some 10 years ago by the late William Wyman and others and will shortly become the site of that institution.

The Gilman School now has a faculty of 15 and a student body of 157. It provides a continuous and systematic course of instruction for boys from the time they are about 10 until they are prepared to enter college. The exercises begin at 9 o'clock, and at 5.30 the day scholars return home to their parents, their minds trained by the best educational methods, their lungs filled with fresh air, and their bodies tired from healthy play.

Before giving a more detailed description of the schools and the working of the various ideals involved it is well to note the spread of the idea over the country.

GROWTH OF THE MOVEMENT.

It is a most interesting fact that, answering to the needs of the boys of New York City, another school of the same type as the Gilman School was founded in 1907, and that its founder, Mr. Frank S. Hackett, knew nothing of the Baltimore experiment.[1]

This new venture, the Riverdale Country School, was the practical answer to a demand by a number of New York families for a near-by country boarding and day school. It was established at Riverdale-on-Hudson, in a beautiful site opposite the Palisades, on a ridge overlooking Van Cortlandt Park. The school property consists of 14 acres, in addition to which the boys have the range of the park for all kinds of outdoor sports. It is reached in 40 minutes by the "subway" from Forty-second Street (only 18 minutes of the time being underground), and the boys go each way in the charge of a master. The success of this school is great. It is patronized by the same class of people as the Gilman School.

In the same year as that of the founding of the Riverdale School the Country Day School for Boys of Boston was founded at Newton, Mass., under the efficient leadership of Mr. Shirley K. Kerns, at one time master of English in the Gilman School and, upon the retirement of Mr. Frederic Winsor, the acting head master for the year 1900–1901 in the same institution. The success of this school was instantaneous, and it may be looked upon as the first direct offshoot of the Baltimore plan.

In 1908 Dr. W. Wellington Massee founded the Massee Country School, at Lawrence Park, Bronxville, N. Y., on the Harlem division of the New York Central Railroad, about 15 miles from New York City. Dr. Massee writes:[2]

> I have had a school both in New York City and in the country, and I find that the conditions are so much better in the latter place that we are able to do almost one-fifth better work. The value of the pure country air for the growing child can not be estimated. From September 26, 1911, to February 15, 1912, we have not had one of our boys under the care of a physician for even one call. In the city the attendance was very irregular, due to sickness of various kinds.

It is well to remember, too, that these boys are drawn from the wealthy class, and their supposedly pampered and sheltered upbringing is considered to be anything but favorable to good and vigorous health.

The next year (1909) saw the well-established and successful Nichols School, of Buffalo, N. Y., founded in 1893, "pull up stakes" and move to an estate of 19 acres in the suburbs of the city, easily

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[1] See a valuable and interesting article by Mr. Hackett in the New York Evening Post (Sept. 2, 1911), entitled "New Country School Idea." I wish to acknowledge my indebtedness to the article for many ideas incorporated in this bulletin.

[2] Under date of Feb. 15, 1912.

THE NICHOLS SCHOOL, BUFFALO, N. Y.

accessible by trolley, where it has erected buildings of the latest and most approved design. Under the new leadership of Mr. Joseph Dana Allen it has emerged as a full-fledged "country school." The announcement issued at the time of the change states that the school is "intended to meet all the demands of the hearty, growing boy who wishes to prepare for college under the best educational conditions and at the same time to occupy his afternoons with study and sport, doing all this among the most healthful and inspiring surroundings. 'The school that cares of a boy all day' expresses the aim of the Nichols School." That the above reasons were considered amply sufficient to explain the change of location is evidenced by the large and generous support the school has received from the people of Buffalo.

By the time another year had elapsed the influence of the idea had traveled far, and at Kansas City, Mo., was founded (1910) the "Country Day School," with Mr. Ralph Hoffman as head master. The prospectus of the school cogently stated that "the boy's afternoon, which in a large city becomes a more and more serious problem, is devoted to vigorous play. Dawdling and loafing are eliminated. The teachers join in the sports, and by their participation not only establish genuine intimacy with their pupils, but are able also to inculcate and strengthen the standards which the boys themselves are quick to recognize as those of manly sport—fairness, courage, courtesy." The school opened with 18 boys, and by the end of this, its second year, the number has more than doubled. It now occupies a temporary building, built and equipped especially for the school, in which it will remain a year or two more. It expects to have by that time a larger and more permanent plant which will make even more special provision for the outdoor side of its life, upon which it is possible to put a great deal of emphasis, owing to the favorable climate of Kansas City.

In 1911 three schools were started and a fourth one organized. The Chamberlayne School, Dr. Churchill Gibson Chamberlayne, head master, at Richmond, Va., is a second direct result of the influence of the Gilman School, at which Dr. Chamberlayne was for five years master of history. The Columbus Academy, Mr. Frank P. R. Van Syckel, head master, is the result of the efforts of a group of leading citizens of Columbus, Ohio, who asked Mr. Van Syckel to come to their city and organize it. The other two schools of this year are instances of older schools following the example of the Nichols School and adopting the new plan. They are the Minneapolis (Minn.) Country School (formerly the Blake School, founded 1907), Mr. Charles Bertram Newton, head master, and the Louisville (Ky.) Country Day School (formerly the Patterson-Davenport School, founded 1902), Mr. William Davenport, head master.

This last school only opened in January, 1912, but like the school at Minneapolis, is already assured of success.

Finally, the Jefferson School for Boys, Mr. Wiliam Tappan, head master, an excellent Baltimore day school founded some 10 years ago, has lately moved to a site in the northwestern section of the city, where it occupies a fine tract of 43 acres.

OUTSIDE INFLUENCE OF THE PLAN.

While the above sketch mentions all the schools of the new type that it has been possible to locate, yet the effects of the movement, surprising as they have been, have by no means reached their limit. A change of attitude is noticed in many of the old boarding schools located near the cities. Their faculties are impressed by the wisdom and growth of the new idea, and feeling its influence, they are welcoming day pupils from the near-by city, finding that the old fear that boarding and day pupils will not get along well together is groundless. Neither system interferes with the other, and such schools as the old Harrisburg (Pa.) Academy, or the Chestnut Hill Academy and Haverford School, near Philadelphia, are rapidly approaching the type of the "country day school," and even in many cases are welcoming the change. In fact the Harrisburg Academy has gone so far as frankly to announce its imitation of the policy of the Gilman School. It is a high tribute to the efficiency of the management of these schools that they are able to adapt themselves to the new conditions with very little difficulty and with great success.

ORGANIZATION AND OWNERSHIP.

All the schools in question are owned either by individuals or by corporations. In fact the latter is the general rule; even in case of individual ownership, there are boards of advisers or trustees. It is an encouragement for the future of education in general as well as for this kind of school in particular that these boards, usually of from 6 to 15 members, are made up of men from the best professional and commercial classes, men of culture, refinement, and capacity, who are glad to give the benefits of the ability that won for them prominence or fortune in other walks of life in order to insure the success of this experiment. More often than not they have entered their own sons as pupils of the school. Thus they add to their general interest the personal element that counts for so much toward the effectiveness of any work. It may be said in consequence of this that perhaps one reason for the great success of these schools is the fact that their management on the financial side is directed by the best business talent in the community.

Of course, the final success of any school is dependent upon the head master or principal, for it is primarily to him that the school must look for its tone, its thoroughness, and its standard of scholarship. He appoints the faculty, with the advice and consent of the trustees. Of course, the heads of the schools under discussion are chosen men of unusual ability, training, and experience.

In many cases the idea of financial return is absent from the ownership, all profits being used to increase the scope or efficiency of the school. The stockholders, if there are any, look upon their investment as being in reality an endowment for the advancement of education.

LOCATION AND EQUIPMENT.

The schools are easily accessible from the city. They vary in distance from 2 to 15 miles and in time needful for the journey from 15 to 40 minutes. It has been found that it is difficult to draw patronage from a distance requiring more of a trip than may be made in half an hour. The Chestnut Hill Academy, in the thickly settled suburbs of Philadelphia, has found that most of its patronage comes from a radius within 15 minutes' ride of the school by train or trolley car. Several schools, notably the Riverdale and Gilman, are planning automobile service and hope by this means to solve what has been called the most difficult of all the problems—that of transportation. The success of a country school, as distinguished from other schools, depends upon securing a site that is both healthful and easy of access; otherwise the school either will be composed entirely of boarders or else will result in a dismal failure.

The grounds, which vary in extent from 3 or 4 acres to the 70 of the Gilman School, contain facilities for football, baseball, tennis, and other sports. The buildings are of the general type found best adapted to the uses of any school, due attention being given to air, light, heat, sanitation, etc. A gymnasium of fair equipment for indoor athletics is an absolute necessity, as healthful exercise is the keynote of the schools, and the weather is often too bad for outdoor sports.

It can be said from personal experience that nothing appeals to the pleasure and interest of the schoolboy quite so much as a swimming pool. This very expensive and attractive accessory is included in the equipment of a number of the schools under consideration. A pool is not a necessity, but with due care its use is very valuable, and it always proves a telling advertisement.

BOARDING OR DAY SCHOOL.

At first, most teachers of experience doubted the wisdom of ranking the boarding and day departments as of equal importance in the same school. Hence some of the schools have only day pupils, notably the Boston Country Day, the Nichols, the Kansas City, the Columbus, the Minneapolis, the Jefferson, and the Louisville Schools. The Gilman, Riverdale, Massee, and Chamberlayne Schools include both, as do the older boarding schools of course—such as the Chestnut Hill and Haverford Schools and the Harrisburg Academy. It has been found that the fears of the doubters have been proved empty, as there are no problems involved that a firm and tactful head master can not easily solve.

In these schools the number of day scholars heavily outbalances the number of boarders. The Massee, with 40 per cent, and the Riverdale, with 35 per cent of boarders, have the largest proportional number, as compared with 28 per cent at the Chamberlayne and 25 per cent at the Gilman School. Many parents make the compromise of having their boys live at school from Monday morning till Friday or Saturday and then enjoy the benefits of home over Sunday.

A boarding department has the special advantage of being very profitable from a business standpoint. Day students are always far more expensive in comparison. No private school, however prosperous it may be or however strong its financial backing, is ever free from the problems incidental to making both ends meet and at the same time continuing to advance in scholarship and equipment.

FACULTY AND NUMBER OF STUDENTS.

On account of the location near a city, with all its advantages and attractions, especially when there is a large university, such as Johns Hopkins or Columbia or Harvard, near at hand, these schools are able to secure teachers of a high standard with less difficulty than the more isolated boarding school, located some distance away in the country. Libraries, theaters, lectures, music, the large stores—all these are advantages well worth considering, for the scholar of to-day is no longer a hermit or a mere bookworm. If so, he is not the type of man that will prove successful in the handling of boys. What is needed is the person who, no matter how great his scholarly training may be, yet has the broad, hearty interests and sympathies of the well-informed, experienced, all-round man. And this is the kind of teacher that these schools have placed on their faculties. It is interesting to note how many of the foremost universities and colleges of both America and Europe are represented in these faculties by advanced as well as by bachelor's degrees.

The faculties are large enough to guarantee small classes, so that the intimate personal touch may never be lacking. It is the need of this close personal relation between teacher and pupil, even in college education, that caused Princeton University, under the inspiring leadership of its former president, Dr. Woodrow Wilson, to introduce at great cost and effort the "preceptorial system," which has proved ch a remarkable success.

The larger schools have specialists to teach each major subject. Strange to say, history and civics are the subjects so far generally neglected or inadequately provided for. The Kansas City School shows the beginning of a wholesome and welcome change in requiring history through the entire course. The general tendency, even in fine schools of this type, is to forget that training for citizenship is of prime importance and to devote an overwhelming amount of class-room energy to classics, mathematics, and other matters of college entrance requirement; a mistake, after all, no matter how necessary these subjects rightfully may be or how valuable from the standpoint of training and culture.

Most of the schools average 1 member of the faculty to every 10 pupils, a proportion allowing unusual personal attention and thoroughness of work.

The Gilman School is the largest country school, having 157 pupils. The Nichols School comes next, with 143, and the Boston Day School, with 130. It is the aim of all the schools to keep their numbers within rather moderate limits in order to insure the realization of the advantages of small classes noted above.

The ages of the boys usually vary from 8 years to 19 or 20. By taking charge of the pupils when very young a firm foundation in the elements of learning is laid, upon which later may be built the firm structure of scholarship that is needed for the more advanced work in the college or university.

In fact it is worthy of note that *thoroughness* has been taken as the ideal for all the educational work of the schools under discussion. They have no desire to be merely "hothouses" for the nurture or forcing of delicate and tender human plants, but manly and healthful places, where the boy shall "stand upon his own feet without fear or favor." The effort is made to classify boys according to their proficiency in each subject and not according to their general standing.

Several schools separate the very little boys from the older in their study and play, bringing them together each day only for the special purpose of arousing emulation and promoting school spirit and solidarity. In many cases women teachers do the work of the primary department.

TERM AND DAILY PROGRAM.

The term usually extends from the latter part of September till the second week in June, the dates being varied to fit local needs of climate, college entrance examinations, etc. It is found almost useless to attempt to continue late in the summer, as boys of the class now attending the schools belong to families that are in the habit of going away early in the season and taking their children with them.

The last few weeks of school are thus badly interfered with. In addition, the summer camps for boys by mountain or seashore start their work soon after the close of the ordinary school term. They draw a great deal of patronage from the same people.

The following is a typical daily schedule:

Daily Schedule.

9 a. m.	Roll call; prayers; announcements.
9.15 to 11.15 a. m.	Recitation and study.
11.15 to 11.30 a. m.	Recess, with bread and milk.
11.30 a. m. to 1.30 p. m.	Recitation and study.
1.30 p. m.	Dinner.
2.15 p. m.	Change to athletic clothes.
2.30 to 4 p. m.	Athletics.
4 to 4.30 p. m.	Bath and change to regular clothes.
4.30 to 5.30 p. m.	Study.
5.30 to 6 p. m.	Detention.

During the fall and spring terms the period for athletics is extended from 4 to 4.15, and each of the following periods is delayed a quarter of an hour, the study period then closing at 5.45, and the detention period at 6.15.[1]

This is varied in some schools by having a recitation or study period (usually for the lighter subjects) shortly after dinner, say, from 2.15 till 3 o'clock, and all athletics afterwards. As much as possible the study in preparation of lessons for the next day is done at school, usually in small groups under the eye of a teacher, who is supposed to direct rather than assist in the work, thus inculcating responsibility and self-confidence and not giving education by the "pouring in" process. The small boys are supposed to do all their studying at school, while the amount of time used for study at home varies with the age and advancement of the pupil. In no case is the parent supposed to play the part of a substitute teacher or tutor, to aid and support the efforts of the teacher.

The midday meal is a hot lunch or dinner. The boys have plenty of time to eat this without undue haste, and with the pleasant companionship of the masters and the other boys. Thus the meals add to both health and good-fellowship.

The schools are open Saturdays for punitive or deficiency work or for the purpose of permitting the boys to spend the day in outdoor play.

ATHLETICS.

As may be expected, athletics form a prominent feature in the life of these schools, for full advantage is taken of the unusual opportunities afforded for exercise in the open air. It is interesting to

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[1] Adapted from the catalogue of the Chamberlayne School, Richmond, Va. The recitation periods in the various schools average 45 to 60 minutes each.

READY FOR A RACE. THE RIVERDALE COUNTRY SCHOOL, RIVERDALE-ON-HUDSON, N. Y.

note the long list that may be made from the statements in the country-school catalogues of various games and forms of exercise now in use. Twenty-five forms of exercise and amusement are actually carried on, namely, football, baseball, "soccer," outdoor and indoor basket ball, squash, bowling, outdoor and indoor handball, tennis, golf, cricket, track and field athletics, swimming, gymnastics, "setting-up exercises," cross-country running, tramping, horseback riding, skating, hockey, coasting and tobogganing, skeeing, snowshoeing, and for the little boys the games of prisoner's base, hide and seek, and snow forts. Certainly they should delight the heart of any normal American boy with good red blood in his veins.

Most of the schools have special physicians, who examine the boys, note any weakness or peculiarity of development, and prescribe the most beneficial form of exercise. All the athletics are under the close supervision of trained instructors, and many of the masters join with the boys in their play, seeing that all take part and that a good spirit of fairness and sportsmanship is cultivated.

These schools have made a healthy fight against a bad tendency common to most schools and colleges. They refuse to bend all their efforts toward producing a winning team for interscholastic matches and to permit the rest of the boys to look on from the side lines. Matches between the teams of different schools are allowed, and even encouraged, but an effort is made to keep them within moderate bounds. It is usual to require each boy to make a complete change of clothing for athletics and to follow the exercise by a shower bath or "rub down." In this way are prevented the colds that usually follow from becoming overheated and then sitting in clothing damp from perspiration.

A study period follows the afternoon sport. The boys come in to it wide awake and all aglow and make good progress toward mastering the lessons for the next day.

Five of the schools put an absolute prohibition on all smoking for boarders, and for day pupils from the time the boy leaves home in the morning until he returns home in the evening and is again entirely under the direction and control of his parents.

EXPENSES, TUITION, ETC.

As a general rule these schools are of necessity expensive, and this matter of expense may be considered to be the greatest handicap under which the movement rests. At present only the sons of people of means can enjoy its advantages. The next task for educators is to bring the benefits of these schools within the reach of a wider circle of people.

The charge for tuition ranges from $125 to $450 per year for day pupils, varying somewhat with the age of the boy and the locatio of the school, the average being about $250. Several schools include in this amount the cost of the midday lunch or dinner, but the larger number charge in addition $1.50 or $2 per week, or, perhaps, $75 per year, for this meal.

The charge for boarding pupils is more moderate than that made by the large boarding schools of the standard type. It ranges from $400 to $950 per year, with an average of about $700. Several of the schools require various "extras" for both boarding and day scholars, the most usual being a yearly charge of $5 or $10 for the athletic association, or of $10 to $15 as a fee for laboratory, manual training, drawing, or music.

SPECIAL FEATURES.

While it appears that none of the regular country schools is under church direction or supervision, yet all stress a broad-minded, sincere, religious life as the ideal for every normal man. The day opens with a religious service and Bible readings or moral and ethical instruction. Among the school patrons are Protestant and Catholic, Jew and Gentile, but all are able and willing to join in the practice of a broadly tolerant religion that is worthy of the American ideal.

It is understood when a boy enters any one of these schools that it is the right of the authorities to require his withdrawal if at any time they deem his presence undesirable.

Each school has its own characteristic features, many of them of great merit, as the following brief description will amply testify.

The Gilman School has for little boys of about 8 to 10 years an "open-air school" under the charge of a special teacher (a woman). It occupies a small, plain, wooden building, built up on three sides without windows, and the fourth side, with southern exposure, entirely open to the fresh air. Here are desks and necessary school furniture, and, wrapped up warmly, the children study and recite as in an ordinary schoolroom. So far no special difficulty has been experienced, even in the changeable climate of a Baltimore winter, and, as in the case of like experiments in public schools, the results for sick and delicate children have been most successful.

The Boston Country Day School makes a special feature of nature study, for which its situation affords great opportunity. Also great emphasis is laid upon vocal music for all students.

The Riverdale School has given successful performances, by the boys, of Shakespearean plays, notably "Julius Cæsar," "Midsummer Night's Dream," and "As You Like It." It also has frequent lectures and addresses, illustrated with stereopticon views.

The Nichols School has business courses and training in carpentry, while the Chamberlayne School has frequent excursions, under the direction of the head master, to near-by points of historic interest.

THE COUNTRY DAY SCHOOL FOR BOYS OF BOSTON, NEWTON, MASS.

The policy of the Columbus Academy is "to avoid a multiplicity of studies at one one time, but to give to those pursued earnest and thorough attention."

The Masses County School, the Minneapolis Country School, and the Louisville Country Day School make a specialty of preparing boys to enter the large boarding schools throughout the country. Other schools discourage this, attempting to keep their pupils till they are ready to enter college. All the schools heartily invite visits of parents and friends, believing that there can be no greater opportunity to show the excellence of the ideas underlying their life and work.

ADVANTAGES OF THE COUNTRY SCHOOL IDEA.

In conclusion, it should be repeated that the country schools offer the advantages of boarding schools without the necessary separation from the parents. The best influences of a home are never supplied by a boarding school; and no teacher or any other person can show the loving care and affection or "insure the softening and refining influences which a mother, of all people, can best give."[1] The right sort of a father should and does have a better influence on his son than any schoolmaster, and "if the master gets a stronger hold on the boy the father suffers in seeing his son more at ease in the companionship and preferring the society of another man to his own."[2] Furthermore, the boarding school boy, when at home on his vacation, might be inclined to spend his time in a round of excitement and festivities, which would tend to pervert his idea of what a home is and how it should be enjoyed.

Finally, the school that keeps a boy in the open, with plenty of fresh air and room for healthful play and away from the streets, the matinées, and moving-picture shows, or perhaps from really harmful diversions, needs no further excuse for its being. The great problem is, how the advantages may be extended to the enormous mass of our public-school children, girls as well as boys. If school boards in country districts can consolidate schools for the purposes of efficiency and arrange for the transportation of children from widely scattered districts to a central school, why can not the method be reversed in the case of the city children? This means the arrangement of such matters as transportation, the noonday lunch, and supervision of athletics and play. It also means the formation of a public opinion necessary for inaugurating the movement and carrying it through.

It has been suggested that for the present, in the congested districts of our cities where the need of a change of conditions is more pressing, the tops of high office and loft buildings might be utilized. Schools for a moderate number of pupils might be organized, taking the more delicate and anemic children first. Here there would be plenty of fresh air and plenty of room to play. Small houses for families are sometimes built there. Why not small school buildings and perhaps open-air classrooms? One or more passenger elevators could be reserved for the exclusive use of the children at certain hours. The isolation of the top of the building would minimize any danger of disturbing the regular tenants. The added revenue from the rent of the roofs should prove sufficient inducement to secure the cooperation of the owners of the buildings.

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[1] Quoted from Nichols School catalogue.

[2] Quoted from an address by Mr. S. K. Kerns, head master of the Boston Day School.

These are merely suggestions. The problem is before the American people, who some day will solve it.

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UNITED STATES BUREAU OF EDUCATION

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PREFATORY NOTE.

The importance of agriculture and home economics as subjects of study in school and college, and the frequent inquiries which come to the Bureau of Education regarding pedagogical literature on these subjects, have led to the preparation of the present bibliography, which is intended to be a convenient and practical guide to current sources of information. The object in view is to present a selection of representative material touching all important educational aspects of agriculture and home economics. While most of the references are to recent publications, a few earlier titles, carefully chosen, have also been included, for historical purposes. Descriptive and critical annotations, either original or quoted from authoritative reviews, have been appended to many of the titles.

The bibliography was compiled and annotated in the library division of the Bureau of Education—the section on agriculture by Edward D. Greenman; the section on home economics by Miss Edith A. Wright; the whole under the direction of John D. Wolcott, acting librarian.

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15. **Chiles, R. P.** Making good farmers out of poor ones; the work of Dr. Seaman A. Knapp. Review of reviews, 42: 563–72, November 1910.

16. **Conference on agricultural science, Amherst, Mass.** Proceedings, 1908–1910. Amherst, Mass., 1908–1910. 3 v. illus. 8°.

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19. ——— Cooperation between the United States Department of agriculture and state school authorities in promoting agricultural education. *In* National education association. Journal of proceedings and addresses, 1908. p. 303–7.

20. ——— Progress in agricultural education, 1910. *In* U. S. Office of experiment stations. Annual report, 1910. Washington, Government printing office, 1911. p. 315–86.

    Published annually since 1902 in the Reports of the Office of experiment stations. Each year a brief summary is given of the work in agricultural education in the United States and in foreign countries, reviewing the progress made in higher, secondary, and elementary agricultural education, with occasional articles dealing with special topics or with agencies affecting the work in this ··ntry and abroad.

21. **Crosby, Dick J.** The work of the national government in extending agricultural education through the public schools. *In* National education association. Journal of proceedings and addresses, 1907. p. 1063–69.

"The work of the national government in aid of agricultural education may be outlined under two main heads: (1) The giving of funds to the different states and territories to support and encourage agricultural education and research; (2) The giving of expert assistance to educators, educational institutions, and the officials of education, by the different executive departments of the government."

22. **Dabney, Charles W.** Agricultural education. New York, Cincinnati, Chicago, American book company, 1910. 59 p 8°. (Education in the United States, ed. by N. M. Butler. Monograph no. 12)

First published in 1900.

A brief history of the origin and development of agricultural schools in America.

23. **Davenport, Eugene.** Aids to agricultural advancement in the West. *In* New York (State) Department of Agriculture. Bulletin 14, 1910. p. 95a–116a.

"The author recommends as a rational system of agricultural education: (1) Courses of collegiate grade, in which approximately one-half of the work is given to technical agriculture of the highest quality, such courses to be offered in the state college and as many other institutions of higher learning as will honestly undertake to serve agriculture in a large way; (2) courses in technical agriculture to be added to all high schools and other institutions of secondary grade that have an agricultural constituency; (3) nature study to be taught in the grades and in the country school."

24. ——— Education for efficiency; a discussion of certain phases of the problem of universal education, with special reference to academic ideals and methods. Boston, D. C. Heath & co., 1909. v, 184 p. 8°.

Contains: Agriculture in the high schools, p. 124–35.—Agriculture in the elementary schools, p. 136–43.—Agriculture in the normal schools, p. 144–46.—The development of American agriculture—what it is and what it means, p. 147–84.

25. ——— Shall we ask for future legislation in the interest of agriculture; if so, what? School and home education, 31: 187–93, January 1912.

Part of the discussion of this topic given at the Columbus meeting for the improvement of agricultural education by land-grant colleges.

26. **Davis, Benjamin Marshall.** Agricultural education. Elementary school teacher, 10: 101–9, 163–76, 277–86, 376–87, 444–52, 11: 15–23, 79–89, 136–45, 266–74, 371–80, 469–84, 517–27, November, December 1909, February, April, May, September, October, November 1910, January, March, May and June 1911.

The United States Department of agriculture, p. 101–9. United States Bureau of education; state legislation, p. 163–76. Agricultural colleges, including extension work, departments of agricultural education, p. 277–86. State normal schools, p. 376–87. National education association; state and other teachers associations, p. 444–52. Educational periodicals, p. 15–23. Periodical literature, p. 79–89. State organizations for agriculture and farmers' institutes, p. 136–45. Agricultural societies, p. 266–74. Boys' agricultural clubs, p. 371–80. Elementary and secondary schools, p. 469–84. Textbooks, p. 517–27.

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28. **Dexter, Edwin Grant.** Agricultural education. *In his* History of education in the United States. New York, London, The Macmillan company, 1904. p. 360–70.

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29. **Draper, Andrew Sloan.** Agriculture and its educational needs. Syracuse, N. Y., C. W. Bardeen, 1909. 92 p. 12°.

Address before State educational association, Syracuse, December 29, 1908.

"A plea for keeping the boys on the farm by making the work intelligent, pleasant, and profitable."—American educational review, May 1910. p. 512.

30. **Duggar, J. F.** The aim in teaching agriculture. *In* South Carolina. Winthrop normal and industrial college, Rock Hill. Rural life bulletin. p. 12–16. (Bulletin, vol. V, no. I, September 1911)

Also in Virginia. University. Conference for the study of the problems of rural life, 1910. p. 240–46.

"The author considers the aim in agricultural teaching to be twofold—(1) To develop or educate the individual, and thereby (2) to promote the material prosperity of the community, state, and nation. The study of agriculture by the children in the schools leads to practical improvement by the parents on the farm, and increased profitableness of the farm supports improved work in the schools."

31. Farm life as the basis of practical education. Craftsman, 16: 243–45, May 1909.

"Some of the plans of Craftsman farms are set forth."

32. **Hamilton, John.** The transportation companies as factors in agricultural extension. Washington, Government printing office, 1911. 14 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular 112)

"Information is given concerning some of the ways in which the transportation companies of the country have been making an effort to promote agriculture by running educational trains, employing experts to instruct farmers, organizing and conducting demonstration farms, publishing and distributing agricultural bulletins, preparing exhibits, organizing agricultural associations, and cooperating with the agricultural colleges and experiment stations in various ways."

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34. **Hart, William R.** Agricultural education . . . [n. p. 1907] 11 p. 8°.

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37. ——— Country life education. Washington, Government printing office, 1907. 13 p. 8°. (United States. Department of agriculture. Office of experiment stations. Circular 73)

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39. ——— How the schools and the United States Department of agriculture can cooperate. Ohio teacher, 31: 7–10, August–September 1910.

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41. **Henry, W. A.** Agricultural education in America and its importance to the commonwealth and the nation. *In* New York (State) University convocation, 1905. Albany, New York State education department, 1906. p. 90–105 (Bulletin 366, January 1906)

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    An account of the provision made in the United States for instruction in agriculture covering agricultural colleges, secondary schools, primary schools, rural schools, and farmers' institutes.

44. **Iles, George.** Teaching farmers' children on the ground. World's work, 6: 3415–20, May 1903.

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    Bibliography: p. 128–33.

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52. **Massachusetts. Board of education . . .** Report of the Board of education of Massachusetts on agricultural education. Submitted to the Legislature of Massachusetts in accordance with resolves approved May 28 and June 10, 1910. January 1911. Boston, Wright & Potter printing co., state printers, 1911. 104 p. 8°.

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"This article calls attention to the declining rate of exportation of agricultural products from the United States as evidence of the need of conserving the fertility of the soil, and suggests the following remedies: (1) Strengthening the work of the U. S. Department of agriculture, the state agricultural colleges and experiment stations, and the farmers' institutes and similar extension agencies; (2) a careful study of the work and influence of special agricultural schools of secondary grade; (3) making provision for the teaching of agriculture and domestic science in the ordinary public high schools; (4) the encouragement of agricultural courses for prospective teachers in state normal schools; (5) the introduction of elementary agriculture into the elementary common schools; (6) the development of additional special agencies for extending agricultural instruction directly to rural communities."

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71. **Sanderson, E. Dwight.** Agricultural courses in New Hampshire schools. *In* New Hampshire State teachers' association. Proceedings, 1907. p. 96–107.

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An attempt to define agriculture as an art and as a science, followed by a brief discussion of the principles of pedagogical agriculture and the possibilities and limitations of the subject in different grades.

77. ——— *and* **Crosby, Dick J.** The American system of agricultural education . . . Washington, Government printing office, 1911. 28 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular no. 106)

"A brief general account of the American system of agricultural education, and includes descriptions of departments of original research and graduate study in agriculture, agricultural colleges and the various grades of instruction provided by them, secondary schools of agriculture and the work along agricultural lines in elementary schools."

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80. ——— ——— Publications of the Department of agriculture classified for the use of teachers. Issued January 27, 1912. 36 p. 8°. (Division of publications. Circular 19)

A list of publications of the Department of agriculture classified for the use of teachers and selected with special reference to their suitability to supplement college and school textbooks in the subjects mentioned. This has been issued with the desire to assist in a more intelligent use of government publications on agricultural subjects by classifying them with reference to the subjects usually taught in schools.

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83. **Wisconsin. Commission upon the plans for the extension of industrial and agricultural training.** Advance sheets of the report of the Commission upon plans for the extension of industrial and agricultural training. Submitted to the governor, January 10, 1911. Madison, Wis., Democrat printing company, 1911. vii, 135 p. 8°.

C. P. Cary, chairman of Commission.

84. **Zeller, John W.** Education in the country for the country. *In* National education association. Journal of proceedings and addresses, 1910. p. 245–52.

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85. **Alabama. Association of agricultural schools. Committee on course of study.** Course of study for the agricultural schools of Alabama. *In* Alabama educational association. Proceedings, 1909. Birmingham, Ala., Dispatch printing co. p. 141–44.

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86. **Coates, C. E.,** *jr.* The principles underlying the formation of an agricultural course in the South. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1899. Washington, Government printing office, 1900. p. 59–64. (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 76)

87. **Cook, George B.** The agricultural and industrial educational movement in the South. *In* Conference for education in the South. Proceedings, 1909. p. 69–84.

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92. ——— Farmers' co-operative demonstration work and its results. *In* Conference for education in the South. Proceedings, 1906. p. 113–28.

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93. ——— How can the masses be induced to adopt a better system of agriculture? *In* Conference for education in the South. Proceedings, 1910. p. 253–58.

94. ——— Improved conditions for the Southern farmer. *In* Conference for education in the South. Proceedings, 1907. p. 183–93.

95. **North Carolina. Laws, statutes, etc.** County farm life school law and explanations, by J. Y. Joyner, superintendent of public instruction of North Carolina. Raleigh, E. M. Uzzell & co., State printers, 1911. 17 p. 8°.

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111. **Ellis, A. Caswell.** The teaching of agriculture in the public schools. Austin, Tex., The University of Texas, 1906. 56 p. 8°. (Bulletin of the University of Texas. No. 85)

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"A series of letters, each a record of practical experience, on country-school and country-life improvement, from a 'Country teacher.'"

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120. **National education association. Department of rural and agricultural education.** Committee on courses of study in agriculture. Report. *In* National education association. Journal of proceedings and addresses, 1911. p. 1138–52.

"This report is concerned only with the courses in agriculture offered in the courses of study in the general public schools and is more a representation of some of the governing influences in the arrangement of study in agriculture than of specific courses of study. Discusses the place of agriculture in the elementary schools, in the one-teacher rural school, and in secondary schools, giving topical outlines and representative courses for these schools."

121. **New York (State) Education department.** The course in nature-study, and agriculture for elementary schools, 1909–10. [Albany, N. Y., 1909] 4 p. 8°.

122. **Parks, M. M.** Agriculture in the public schools. *In* Georgia. Department of education. Annual report, 1904. p. 153–67.

123. **Roy, V. L.** Progress in agricultural education in the public schools of Louisiana. Louisiana school review, 18: 356–63, April 1911.

124. **Stevens, F. L.** Agriculture in the elementary school. *In* Conference for education in the South. Proceedings, 1910. p. 219–24.

"The author lays emphasis on the following general propositions: 1. The ordinary elementary teacher can teach as large a percentage of the teachable facts of agriculture as she can of history, geography, or English. 2. A textbook should be used as the basis, supplemented with available illustrative material. 3. Teachers of the subject should receive special instruction in summer schools and institutes. 4. The teaching of agriculture should be required by school authorities. 5. An itinerant supervisor should be employed to assist the efforts of the local teacher."

125. **Stickney, Alpheus B.** Shall theoretical and practical agriculture and the physical development of childhood be added to the curriculum of the city public schools? A paper read at a meeting of the American association for the advancement of science held in Minneapolis, Minnesota, December 28, 1910. St. Paul, McGill-Warner co., 1910. 15 p. 8°.

Reviews changes in industrial conditions and recommends industrial and agricultural courses for city schools.

126. **Storm, Ashley V.** Public school agriculture. Iowa yearbook of agriculture, 1908. p. 84–90.

Shows the need of agriculture in the public schools as a means of improving agriculture, home life, and the schools.

127. **Sweet, John.** Concerning some common-sense ways of interesting school children in nature studies relating to agriculture, horticulture, viticulture and farm life. Western journal of education, 11: 399–410, March 1906.

128. **Texas. Department of education.** Course of study for the public free schools of the state of Texas. Some work in agriculture suggested. Houston, Tex., State printing company [1906?] 83p. 8°.

129. **True, Alfred C.** Agriculture in the public schools. *In* Pennsylvania State educational association. Directors' department. Proceedings, 1907. p. 16–25.

130. ——— Introduction of elementary agriculture into schools. *In* United States Department of agriculture. Yearbook, 1906. p. 151–64.

"An account is given of the growth of interest in the teaching of elementary agriculture in public schools as indicated by the attitude of men of prominence, farmers' organizations, school officers and teachers, and by recent legislation. Progress in the formulation of courses in elementary agriculture, the preparation of textbooks and manuals, the development of training courses for teachers, the organization of agricultural schools, and the number of pupils studying agriculture, is reviewed and some suggestions are made concerning ways in which the farmer may help the schools."

RURAL SCHOOLS

131. **Association of American agricultural colleges and experiment stations. Committee on methods of teaching agriculture.** The teaching of agriculture in the rural common schools. Washington, Government printing office, 1904. 20 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular no. 60)

"This report discusses the development of industrial training in the common schools, the movement to introduce agriculture into the rural schools, obstacles to this movement, and the object of teaching agriculture, and outlines work in nature study and elementary agriculture suitable for the common schools."

132. **Bishop, Edward C.** Agriculture in the rural schools. *In* Missouri. First district state normal school, Kirksville. Rural life conference, 1911. p. 14–19. (Bulletin, v. XI, no. 2, September 1911)

133. **Bigelow, M. A.** Nature study and agriculture in rural schools. *In* Annual conference on agricultural science, Amherst, Mass. Proceedings, 1909. p. 5–13.

"The writer sees no conflict between nature study and school agriculture, but doubts the advisability of substituting the latter for the former in the seventh and eighth grades."

134. **Bricker, Garland A.** Suggestive outline for one year course in secondary agriculture for rural and village high schools. Education, 32: 75–76, October, 1911.

135. **Bull, Coates P.** Rural school agriculture. St. Anthony Park, Minn. [Minnesota experiment station] 1907. 116 p. 8°. (Minnesota. University. Department of agriculture. Bulletin no. 2)

Exercises prepared for the use of teachers in the rural schools of Minnesota.

136. **Chisholm, Nellie B.** Agriculture in the rural school. *In* Michigan Farmers' institutes. Bulletin 14. 1908. p. 283–86.

"The author emphasizes the demands of the new education as a preparation for life, and points out ways in which the teaching of agriculture helps to meet these demands."

137. **Crosby, Dick J.** The most useful school in the country. *In* Pennsylvania. Department of agriculture. Annual report, 1909. p. 257–63.

"Two small country schools are described in considerable detail as illustrating the possibilities of a rural school: one at Calvert Center, Md., and the other at Waterford, Pa."

138. ——— The relation of nature study and agriculture in elementary rural schools. Nature-study review, 5 : 93–98, April 1909.

139. ——— The use of illustrative material in teaching agriculture in rural schools. *In* U. S. Department of agriculture. Yearbook, 1905. p. 257–74.

"In this article the author discusses the value of agriculture in rural schools, describes methods employed in teaching this subject in a consolidated school in Tennessee, in a village high school in Pennsylvania, and in a county high school in Kansas, describes eight exercises which can be performed with simple and inexpensive apparatus, and discusses agriculture as an aid to other school work."

140. **Davis, Benjamin M.** What constitutes successful work in agriculture in rural schools? *In* National education association. Journal of proceedings and addresses, 1908. p. 1188–94.

"This discussion is based on a study of replies to a questionnaire addressed to teachers and others interested in agricultural education."

141. **Foght, Harold Waldstein.** The American rural school; its characteristics, its future, and its problems. New York, The Macmillan company, 1910. 361 p. 12°.

Contains: Nature study and school grounds, p. 154–78. School gardens, p. 179–204. Elementary agriculture and industrial clubs, p. 205–35.

"Intended for rural school teachers, superintendents, and school board members; for teachers' reading circles, normal school training classes, and all the public at large who are interested in the profound movement to make our American rural life richer and in its labor more effective by means of schools adapted to the changing needs of rural society and the demands of modern life."—Pref.

142. **Harvey, Lorenzo D.** Instruction in agriculture and domestic science in rural communities in Wisconsin. *In* Wisconsin. Department of education. Bulletin of information no. 5. Madison, Democrat printing company, 1900. p. [3]–23.

143. **Hochbaum, H. W.** Bulletin of agriculture and nature study for rural schools. [Greeley] State normal school, 1910. 44 p. 12°. (State normal school of Colorado. Bulletin. Ser. X, no. 5)

Bibliography: p. 44.

"This bulletin is devoted to rural school improvement and discusses . . . the aims in teaching nature study and agriculture and the training of rural school teachers."

144. ——— Why we should teach agriculture in the rural schools. Colorado school journal, 27 : 19–21, December 1911.

145. **Illinois. Conference on the teaching of agriculture in the public schools. Committee on course of study . . .** *Appointed*, 1910. Report made to the Second conference, held January 18–21, 1911, Urbana, Ill. Suggested course of study in nature-study agriculture for the one-room rural schools of Illinois. School news, 24: 445–52, June 1911.

146. **Ivins, Lester S.** A plea for agricultural instruction in the rural schools. Ohio teacher, 29: 339–42, March 1909.

147. **Kern, Olly Jasper.** Among country schools. Boston, New York [etc.] Ginn & co. [1906.] 366 p. 12°.

Contains: School gardens, p. 56–84. A farmers' boys' experiment club, p. 129–57. Educational excursions to the college of agriculture, p. 158–74. The country school and the farmers' institute, p. 175–200. The new agriculture and the country school, p. 201–25.

"This is one of the best contributions to rural education that has been written."

148. **Knapp, Seaman A.** Agricultural education for the rural districts. *In* National education association. Journal of proceedings and addresses, 1909. p. 954–59.

149. **McClintock, James E.** Exercises in elementary agriculture for Maine rural schools. Prepared for the State educational department. [n. p.] 1910. 15 p. 8°.

150. **Minnesota. University. Department of agriculture.** Exercises in agriculture and housekeeping for rural schools . . . St. Paul, Minn., McGill-Warner co. [1903?] 196 p. 12°. (Bulletin no. 1)

151. **Powell, E. P.** Agriculture in rural schools. *In* American association of farmers' institute workers. Proceedings, 1902. p. 109–113.

152. **True, Alfred C.** Some problems of the rural common school. *In* U. S. Department of agriculture. Yearbook, 1901. p. 133–54.

"Discusses some of the weaknesses of the rural common schools and ways of overcoming them, including centralization of schools, transportation of pupils, the introduction of studies more closely related to the practical business of the farm, securing teachers in sympathy with farm life, making the schools the center of intellectual life of the community, and the cooperation of the farmer and his family with teacher and pupils."

153. **Winnebago county [Ill.] schools.** [Annual reports] 1903–1910. O. J. Kern, county superintendent, Rockford, Ill.

These reports, published under various names, are practical, illustrated accounts of methods and results in the Winnebago county rural schools. They contain valuable material on agriculture, libraries, school grounds, transportation and consolidation, and industrial education.

SECONDARY SCHOOLS

154. Agricultural education in secondary schools. Papers read at the second annual meeting of the American association for the advancement of agricultural teaching, Columbus, Ohio, November 14, 1911. Washington, Government printing office, 1912. 53 p. 8°. (U. S. Bureau of education. Bulletin, 1912, no. 6)

CONTENTS: 1. Essentials in a state system of agricultural education [by] F. W. Howe.—2. The need for reliable scientific data regarding social and economic conditions in rural communities [by] E. C. Higbie.—3. The proper equipment of an agricultural high school [by] D. O. Barto.—4. The Smith's agricultural school and agricultural education in Massachusetts [by] R. W. Stimson.—5. The unprepared teacher of agriculture in high schools and colleges of education [by] A. V. Storm.—6. What is done to prepare teachers of secondary school agriculture [by] A. C. Monahan.—7. Recent publications of the Bureau of education on agricultural education.

"Six papers on vital questions concerning secondary school agriculture, read before the American association for the advancement of agricultural teaching at its second meeting held in November 1911 . . . They discuss in an able manner the place of agricultural education in the state system of public instruction and the need of reliable data concerning rural conditions, as well as matters relating to equipment and teachers for the agricultural high school."

155. **Anderson, Leroy.** Agriculture in the high schools. Whittier, Cal., Linotyping and printing by boys of the state school, 1909. 18 p. 8°. (University of California. College of agriculture. Agricultural experiment station. Circular no. 47, November 1909)

"A partial list of helpful bulletins, circulars and books on agriculture": p. 16–18.

156. ——— The teaching of agriculture in the secondary schools. University of California chronicle, 13: 164–76, April 1911.

Discusses the nature of agriculture and the reason for teaching it.

157. **Association of American agricultural colleges and experiment stations. Committee on methods of teaching agriculture.** Secondary courses in agriculture. [Washington, Government printing office, 1902] 10 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular no. 49)

Deals with secondary agricultural education in connection with colleges and in town high schools, giving a number of high-school courses.

158. **Babcock, Ernest B.** *and others.* Development of secondary school agriculture in California. [Berkeley, 1911] 53 p. 8°. (University of California. College of agriculture. Agricultural experiment stations. Circular no. 67)

"Recommended list of books for the high school agricultural library": p. 51–53

159. **Barto, D. O.** Problems in secondary school agriculture. *In* Central association of science and mathematics teachers. Proceedings, 1908. p. 16–23.

160. **Bricker, Garland A.** Shall secondary agriculture be taught as a separate science? Education, 30: 352–56, February 1910.

161. ——— Suggestions for organizing a high school course in agriculture . . . Columbus, Ohio state university, 1910. 16 p. illus. 8°. ([Ohio state university, Columbus. College of agriculture and domestic science] The Agricultural college extension bulletin. Vol. VI, Supplement 2, no. 11)

"Books and pamphlets containing laboratory and field exercises": p. 4–7.

162. ——— The teaching of agriculture in the high school . . . New York, The Macmillan company, 1911. xxv, 202 p. illus. 8°.

"Recent textbooks on general agriculture": p. 185–90.

"In the following pages Mr. Bricker has analyzed the problem of agricultural education in the secondary schools. He has formulated the aims and methods of agricultural education in the light of the principles and hypotheses that have been gleaned from experience in the field of general education."—W. C. Bagley in Pref.

163. **Buckham, Matthew H.** Agriculture in the high school; an address to the students of the winter course in the University of Vermont, January 5, 1910. [Burlington? Vt.] 1910. 7 p. 8°.

164. **Burnett, E. A.** The function of the land-grant college in promoting agricultural education in secondary schools. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1909. p. 87–93. (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 228)

165. **Crosby, Dick J.** Agricultural schools. *In* New York state agricultural society. Proceedings of the seventeenth annual meeting, Albany, 1910. p. 159a–169a.

"Briefly discusses the status, types and function of secondary agricultural schools in this country."

166. ——— Agriculture in high schools. Southern educational review, 4: 37–43, February-March 1907.

167. ——— *and* **Crocheron, B. H.** Community work in the rural high school. *In* U. S. Department of agriculture. Yearbook, 1910. p. 177–88.

168. **Davenport, Eugene.** The next step in agricultural education; or, The place of agriculture in our American system of education. Urbana, Ill. [1908] 22 p. 8°.

"This address was read first at Illinois college, Jacksonville, October 31, 1907, and after some alterations read, as here printed, at Missouri state university, Columbia, January 9, 1908."

The author summarizes his arguments in the following statement: "This then is the place of agriculture in our scheme of education—that it shall become an integral part of our educational system, to the end that all great interests shall be served equally well by a single comprehensive system of schools; and the next step is to see to it that agriculture shall attain the same important and honorable place in our high schools that it has already attained in our universities."

169. **Davis, Booth C.** The possibilities of agricultural education in the high schools. *In* New York state agricultural society. Proceedings of the seventy-first annual meeting, Albany, 1911. p. 381–86.

170. **Doster, James J.** Agriculture in public high schools. *In* Conference for education in the South. Proceedings, 1910. p. 225–33.

"The author discusses the reasons for general rural indifference to school improvement and calls attention to the need of textbooks in physics, biology, chemistry, mathematics, bookkeeping, and history that are adapted to rural conditions and interest, and illustrates the importance of agriculture in the industrial development of the race. He suggests that country boys and girls should be encouraged to carry on a productive business in truck or fruit growing or in stock or poultry raising while studying in the rural high school. The school should be the social center of the neighborhood, and evening classes for the benefit of the women of the neighborhood in cooking, dress-cutting and dressmaking, in training to care for the sick, and in the prevention of disease, might be formed."

171. **Duncan, L. N.** Best method of introducing agriculture and allied branches into high schools. *In* Alabama educational association. Official proceedings, 1910. p. 207–14.

172. **Eldred, C. H.** Practical agriculture in the smaller high school. Wisconsin journal of education, 42: 160–62, June 1910.

173. **Giles, F. M.** Teaching of agriculture in the high school. School review, 17: 154–65, March 1909.

"References": p. 165.

This paper recommends the study of elementary agriculture as an introduction to high school science.

174. **Hatch, Kirk Lester.** The high school course in agriculture. Madison, The University of Wisconsin, 1911. 40 p. 12°. (Bulletin of the University of Wisconsin, no. 441. High school ser., no. 12)

Bibliography: p. 37–40.

Gives a suggested arrangement of work in agriculture and related sciences for each year; details of each unit of work; a syllabus of a four-year secondary course in agriculture; necessary laboratory supplies for a class of 12 with estimated cost; and a list of bulletins of the U. S. Department of agriculture recommended for school use.

175. **Hays, Willet M.** Agricultural education in high schools. *In* U. S. Bureau of education. Report of the Commissioner for the year 1903. v. 2, p. 1368–72.

176. ——— History of secondary agricultural education. *In* Society for the promotion of agricultural science. Proceedings, 1907. p. 73–83.

177. **Hunt, T. F.** Agriculture in secondary schools. *In* Pennsylvania. Department of agriculture. Annual report, 1907. p. 382–95.

A brief review of the progress made in introducing agriculture in secondary schools.

178. ——— Agriculture in township high schools. Pennsylvania school journal, 56: 327–35, February 1908.

179. **Hurd, William Daniel.** Approved course in agriculture for high schools and academies in Maine . . . Waterville, Sentinel publishing company, 1909. 66 p. 8°.

Includes bibliographies.

180. **Knapp, Seaman A.** Shall agriculture be taught in the secondary schools of the United States? Southern educational review, 4: 53–64, February–March, 1907.

181. **Lochead, W.** Agricultural education in secondary schools. Southern educational review, 4: 43–53, February–March 1907.

182. **Main, Josiah.** Agriculture in the high school. Popular science monthly, 79: 385–95, October 1911.

183. **Main, Josiah.** Correlation of high school science and agriculture. Education, 30: 135–45, November 1909.

184. ——— Educational agriculture. Hays, Kan., 1910. 74 p. illus. 8°. (Western state normal school. Bulletin, vol. II, no. 3)

"List of books suitable for a high-school agricultural library": p. 73–74.

A discussion of high-school agriculture as the most important division of the subject of agricultural education, with the object of the proper fixing of the upper and lower limits of secondary agriculture, thereby determining the work of the elementary grades and higher institutions.

185. **Michigan. State agricultural college, Lansing. Department of agricultural education.** A course in agriculture for the high schools of Michigan. [Lansing] Michigan agricultural college, 1911. 64 p. 8°. (Bulletin no. 7, July 1911)

186. ——— ——— Report of agriculture in the high schools of Michigan. [Lansing] Michigan agricultural college, 1911. 23 p. illus. (Bulletin no. 6, July 1911)

187. **National society for the study of education.** Eleventh yearbook [1912] Part 2. Agricultural education in secondary schools. Chicago, Illinois, The University of Chicago press [1912] 113 p. 8°.

CONTENTS: 1. The training of teachers for secondary courses in agriculture [by] A. C. Monahan, p. 9–21. 2. The vocational agricultural school [by] R. W. Stimson, p. 22–53. 3. State-aided departments of agriculture in public high schools [by] Dick J. Crosby, p. 54–65. 4. High-school agriculture without state subsidy [by] W. H. French, p. 66–74. 5. Short courses and extension work in agriculture for high schools—(*a*) In the South [by] H. F. Button, p. 75–82; (*b*) In the North [by] F. R. Crane, p. 83–90. 6. In public high schools should agriculture be taught as agriculture or as applied science (*a*) [by] W. R. Hart, p. 91–97; (*b*) [by] G. F. Warren, p. 98–101.

"This yearbook was discussed at the St. Louis meeting of the National society, February 26, 1912. The program represents an analysis of the typical experiments that are being undertaken, with some interpretation of each plan and its results. The contributors of the articles are specialists who are in intimate touch with the special phases of the work which they describe."

188. **New York (State) Education department.** Syllabus for secondary schools; agriculture . . . 1910. Albany, New York state education department, 1910. 103 p. 8°.

List of books for classroom work, p. 3–4.

189. **Owens, Clarence J.** Secondary agricultural education in Alabama. Washington, Government printing office, 1909. 30 p. illus. 8°. (U. S. Department of agriculture. Office of experiment stations. Bulletin 220)

Gives an account of the district agricultural schools in Alabama with a description of their course of study and equipment.

190. **Robison, Clarence H.** Agricultural instruction in the public high schools of the United States . . . New York, Teachers college, Columbia university, 1911. 205 p. 8°. (Teachers college, Columbia university. Contributions to education, no. 39)

"List of references on agricultural education": p. 191–200.

CONTENTS: 1. Agricultural education. 2. Public high school. 3. Some typical high schools teaching agriculture. 4. Administration, equipment and methods. 5. Preparation and salaries of teachers of agriculture in the high schools. 6. Special secondary schools of agriculture. 7. Problems of agricultural instruction in secondary schools.

"It comprises the most comprehensive study of high school instruction in agriculture that has been made in this country . . . Scattered throughout the work are 54 tables giving in condensed form the results of the author's investigations, and these with the topical index will render much valuable information available to students of education."

191. ——— The present status of agricultural education in public secondary schools of the United States. [Chicago, 1911] p. 333–44. 8°.

Reprinted from the School review, vol. xix, no. 5, May 1911.

192. **True, Alfred C.** Secondary education in agriculture in the United States. [Washington, Government printing office] 1909. 11 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular 91)

"A brief review of the status of secondary education in agriculture in the United States, together with a discussion of the desirable relationships between secondary and collegiate education in agriculture and outlines of two-year and four-year agricultural and horticultural courses, showing the time given not only to agriculture and horticulture but also to other natural sciences, languages, history, and mathematics."

193. **Warren, George Frederick.** Agriculture for high schools. *In* Annual conference on agricultural science, Amherst, Mass. Proceedings, 1909. p. 32–43.

A discussion on the economic value of agricultural study, based on a Cornell university investigation of the increased earning power of trained farmers as compared with untrained.

194. ——— The place of agriculture in the public high schools. *In* National education association. Journal of proceedings and addresses, 1910. p. 1094–1103.

A brief discussion of how much education the farmer needs, what schools should teach agriculture, and the place and object of teaching it in the high school.

AGRICULTURAL HIGH SCHOOLS

195. **Crocheron, Bertram H.** Agricultural education through the public schools. *In* Maryland. State board of education. Forty-fifth annual report, 1910–11. Baltimore, The Sun job printing office, 1911. p. 68–93.

196. ——— Community work in the agricultural high school. *In* National society for the study of education. Tenth yearbook, 1911. Part II, p. 9–16.

"A detailed description of the community work undertaken by the Baltimore (Md.) county agricultural high school. It includes an account of the school, its organization, and work among the farmers, farmers' wives, and the young people of the community. This paper shows the great possibilities of a rural high school in its service to an entire community, children and adults as well."

197. ——— Laboratory and field work in the agricultural high school. *In* National education association. Journal of proceedings and addresses, 1910. p. 1089–93.

Discusses the difficulties of laboratory work in the agricultural high school.

198. ——— A very real country school; how it touches and teaches all the people. World's work, 23: 318–26, January 1912.

A popular account of the Agricultural high school of Baltimore county, Maryland.

199. **Cromwell, A. D.** Need for agricultural high schools. School review, 16: 198–200, March 1908.

200. **Crosby, Dick J.** The place of the agricultural high school in the system of public education. *In* National education association. Journal of proceedings and addresses, 1910. p. 1103–7.

The author discusses two things essential in a system of public education: 1. A standard graded course from kindergarten through the university; 2. Adequate provision for those who cannot pursue the whole course.

201. ——— Special agricultural high schools. *In* National education association. Journal of proceedings and addresses, 1909. p. 974–76.

202. **Georgia. University.** Report of J. S. Stewart . . . on the tentative curriculum of the district agricultural high schools . . . Adopted by the Board of trustees of the University of Georgia, January 10, 1907. [n. p., 1907] 8 p. 8°.

203. **Macnamee, Richard S.** District high schools. Pennsylvania school journal, 56: 487–91, May 1908.

204. **The Minnesota agricultural high school . . .** *In* Arkansas. Department of public instruction. Biennial report, 1907–1908. Little Rock, Arkansas, Democrat printing and lithographing co. p. 140–73.

205. **Noble, Stuart Grayson.** The Alabama system of agricultural high schools. Educational exchange, 26: 10–13, January 1911.

206. ——— The agricultural high school in Mississippi. Mississippi school journal, 15: 1–6, January 1911.

207. ——— The curriculum of the agricultural high school. Mississippi school journal, 15: 7–11, March 1911.

"Presents the results of a detailed study of the curricula of the agricultural high schools of Alabama, Georgia, and Mississippi."

208. ——— Shall we have a secondary school of agriculture? Mississippi school journal, 15: 8–11, December 1910.

209. **Reynolds, J. H.** Agricultural high schools. *In* Southern educational association. Journal of proceedings and addresses, 1908. p. 515–25.

COUNTY SCHOOLS OF AGRICULTURE

210. **Cobb, C. A.** What one Southern county agricultural high school has done and is doing. *In* Conference for education in the South. Proceedings, 1910. p. 64–69.

Describes the work of the county agricultural high school, Chickasaw County, Mississippi.

211. **Davis, Kary C.** County schools of agriculture in Wisconsin. *In* U. S. Department of agriculture. Office of experiment stations. Report, 1904. p. 677–86.

"Describes the equipment of these schools, the character of instruction and facilities, and the attitude of the students and the public towards them."

212. **Johnson, A. A.** County schools of agriculture and domestic economy in Wisconsin. Washington, Government printing office, 1911. 24 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Bulletin 242)

"This report deals with the origin, equipment, organization, and work of these schools, and also contains statistical data concerning the students, graduates, and income.

213. **Michigan. Department of public instruction.** County schools of agriculture. *In its* Seventy-first annual report. Lansing, Wynkoop, Hallenbeck, Crawford co., 1908. p. 35–42. (Department of public instruction. Bulletin no. 24)

A digest of the law establishing county high schools, with general suggestions regarding their organization, courses of study, etc.

MOVABLE SCHOOLS OF AGRICULTURE

214. Agricultural demonstration trains of the University of California. University of California chronicle, 11: 186–87, April 1909.

215. **American association of farmers' institute workers.** Report on movable schools of agriculture . . . *In its* Proceedings, 1908. Washington, Government printing office, 1909. p. 23–28.

216. **Ball, S. Mays.** With a prosperity train in Georgia. World's work, 16: 10445–53, July 1908.

217. **Gregory, C. V.** Farming by special train. Outlook, 97: 913–22, April 22, 1911.

218. **Hamilton, John.** Form of organization for movable schools of agriculture. Washington, Government printing office, 1908. 8 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular 79)

"A plan is proposed to organize movable schools of agriculture for farmers over nineteen years of age and for teachers in rural schools. A course is to extend over three or four seasons. The purpose is to equip several persons in each community so that they will be able to improve in their locality the branch of agriculture which the school represents."

219. **Snyder, A. H.** Traveling schools. *In* Conference for the study of the problems of rural life, University of Virginia, 1909. p. 48–54.

220. **Washington, Booker T.** Farmers' college on wheels. World's work, 13: 8352–54, December 1906.

221. **Wilson, N. O.** Railroading knowledge to the farmers: special trainloads of demonstrations and exhibits. World's work, 23: 100–6, November 1911.

FARMERS' INSTITUTES

222. **American association of farmers' institute workers.** Proceedings, 1896–1910. Washington, Government printing office [1897–1911] 15 v. 8°.

Published by the U. S. Department of agriculture.

223. **Butterfield, Kenyon L.** A significant factor in agricultural education. Educational review, 21: 301–6, March 1901.

"The work of the grange and farmers' institutes."

224. **Creelman, G. C.** [Historical sketch of the American association of farmers' institute workers] *In* American association of farmers' institute workers. Proceedings, 1906. Washington, Government printing office, 1907. p. 11–15.

225. **Graham, A. B.** The farmers' institute with relation to rural public schools. *In* American association of farmers' institute workers. Proceedings, 1908. p. 46–51.

226. **Hamilton, John.** The farmers' institute as a factor in creating a desire for an agricultural education. *In* American association of farmers' institute workers. Proceedings, 1902. p. 68–73.

Discussion, p. 73–77.

227. ——— Farmers' institutes for women. Washington, Government printing office, 1909. 16 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular 85)

"A discussion of the importance of farmers' institutes for women is followed by suggestions for organizing such work, including forms of organization for county and state associations, and data concerning the kind of instruction women's institutes should give, and the extent to which women's institute work has been developed in the different states."

228. ——— Farmers' institutes for young people. Washington, Government printing office, 1910. 40 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular no. 99)

"Calls attention to the lack of adequate means for giving vocational training in agriculture to young people in rural districts after they leave the public school and before they enter upon their life occupation. As a partial remedy for this the author recommends the organization of boys' and girls' clubs, farmers' institutes for young people, subjects for institute study, systematic course for contest work, boys' encampments, form of organization, model constitution."

229. ——— The farmers' institutes in the United States. *In* U. S. Office of experiment stations. Annual report, 1910. p. 387–424.

The reports of the Farmers' institute specialist of the Department of agriculture are published annually. They include discussions on the progress and problems of institute work, accounts of the annual meeting of the American association of farmers' institute workers, and detailed reports of the farmers' institutes in different states.

230. ——— History of farmers' institutes in the United States. *In* U. S. Office of experiment stations. Report, 1907. p. 307–54.

"Includes a discussion of the progress and problems of the institute movement and a discussion of the agricultural education extension movement."

231. **Stevens, F. L.** The farmers' institute with relation to agricultural high schools. *In* American association of farmers' institute workers. Proceedings, 1908. p. 53–57.

Discusses the duty of the agricultural high school to the individual and its duty to the community. The author sums up his recommendations as follows: "A dominant agricultural atmosphere to ennoble and dignify agriculture, to make the pupil realize that agriculture is worth the while; a proper recognition of agriculture in our textbooks of history, geography, literature, science; a school curriculum broad enough to give culture, but special enough to bear upon the lives of the pupils and adapted to the majority, not to the minority, of the graduates; a competent teacher secured by whatever salary is necessary; a cooperation between the agricultural high school and the agricultural colleges and normal schools of the state."

AGRICULTURAL CLUBS

232. **Bishop, Edward C.** Nebraska corn book, including a brief treatment of the principal corn plants, potatoes and sugar beets, with something about domestic science, manual work, and announcements concerning the 1906 Corn contest and convention. Lincoln, For the Nebraska boys' and girls' associations, The University publishing co., 1906. 78 p. illus. 8°.

A manual prepared for the boys and girls of Nebraska taking part in the corn growing and cooking contests.

233. **Crosby, Dick J.** Boys' agricultural clubs. *In* U. S. Department of agriculture. Yearbook, 1904. p. 489–96.

"This paper includes a description of the boys' exhibit of corn at the Louisiana purchase exposition, the development of boys' clubs in Illinois and other states, and school fairs, and discusses the educational value of the work done by such organizations."

234. **Duncan, L. N.** The boys' corn clubs. Progressive school journal, 1:6–7, May 1911.

235. **Hamilton, John.** Agricultural fair associations and their utilization in agricultural education and improvement. Washington, Government printing office, 1910. 23 p. 8°.

"This circular gives the result of an extended study of the conditions of country fairs in the various states, and contains numerous suggestions in detail as to methods of increasing their usefulness for betterment of educational, social, and economic conditions in rural communities. An appendix contains a suggested form of organization."

236. **Howe, F. W.** Boys' and girls' agricultural clubs. *In* Virginia. University. Conference for the study of the problems of rural life, 1909. p. 43–47.

237. ——— Boys' and girls' agricultural clubs. Washington, Government printing office, 1910. 23 p. illus. 8°. (U. S. Department of agriculture. Farmers' bulletin no. 385)

"Available publications": p. 19–22.

"This reviews the work already accomplished by boys' and girls' agricultural and domestic science clubs in the United States, the assistance given by this Department, and the relation of such work to rural schools, and offers practical suggestions for the organization of such clubs and the planning of their work. There is also included a list of free publications of this Department and of various state colleges and experiment stations dealing directly or indirectly with this form of school extension work and related subjects."

238. **Kern, Olly Jasper.** "Learning by doing," for the farmer boy. Review of reviews, 28: 456–61, October 1903.

Boys' agricultural club of Winnebago county, Illinois.

239. ——— Winnebago county boys' and girls' clubs. *In his* The Winnebagoes, 1903 [Rockford, Ill. 1903] p. 39–49.

240. **Nebraska. Department of public instruction.** Agricultural and domestic science clubs. *In its* Biennial report, 1905–1907. Fremont, Nebraska, Hammond printing company. p. 420–21.

Corn contest, etc., p. 421–81.

241. **Nebraska. University. Department of farmers' institutes.** Nebraska boys' and girls' associations. Lincoln, Nebraska, 1907, 1908. (University bulletin. Series xii, no. 25; series xiii, no. 11, 14)

242. **Price, Homer C.** Agricultural clubs in rural schools. Ohio state university. Bulletin, series 7, no. 10. 1904.

"This bulletin contains suggestions for organizing clubs in the rural schools of Ohio. These suggestions are the outgrowth of the previous year's experience of the first club formed in Ohio under the auspices of the students of the Agricultural Union."

243. **Roy, V. L.** Boys' agricultural clubs. 14 p. (Louisiana. Department of education. Circular of information, December 1909)

244. **Wisconsin. University. University extension division.** Farmers' clubs, organization, discussion, programs, loan of books and study materials. Madison, The University, 1909. 9 p. 12°. (University bulletin, no. 34)

SCHOOL GARDENS

245. **Babcock, Ernest B.** Suggestions for garden work in California schools. Berkeley. University press, 1909. 48 p. illus. 8°. (University of California. College of agriculture. Agricultural experiment station. Circular no. 46. October 1909).

Bibliography: p. 45–48.

"The author reviews briefly the progress of the children's garden movement, gives illustrations of successful school garden work in California, outlines a scheme successfully carried out at Chico, Cal., for the business management of school gardens through the organization of a school bank, and gives general suggestions to teachers who are beginning school garden work as to the creation of public sentiment for the work and as to details of the work in small rural or ungraded schools and in large rural or city schools."

246. ——— *and* **Stebbins, Cyril A.** The school garden in the course of study. Western journal of education, 16: 6–7, August 1911.

247. **Baldwin, W. A.** School gardens and their relation to other school work. [Philadelphia? 1905?] 15 p. (American civic federation. Department of children's gardens. Department pamphlet no. 2)

248. **Conference on agricultural science. 3d, Amherst, Mass. . . . 1910.** Proceedings of the third annual Conference on agricultural education. School and home gardens . . . Amherst, The College, 1910. 30 p. illus. 8°. (Massachusetts agricultural college. Department of agricultural education. Circular 10)

"Books on school and home gardens": p. 29.

Contains: 1. Coordination between garden work and nature work and book work, by G. L. Green.—2. How agriculture put new life into a rural school, by E. H. Nash.—3. Rural school and home gardens during the summer, by Elizabeth Hill.—4. Gardening in the schools of Springfield, by F. A. Stebbins.—5. Home gardens of the Worcester public schools, by E. R. Thayer.—6. Some suggestions for beginning garden work, by W. R. Hart.

249. **Corbett, Lee C.** The school garden. Washington, Government printing office, 1905. 40 p. illus. 8°. (U. S. Department of agriculture. Farmers' bulletin, no. 18)

250. **Crosby, Dick J.** Children's gardens, prospectus of the Department. 3d ed. [Philadelphia? 1906] 8 p. 8°. (American civic association. Department leaflet no. 1)

251. **Davis, Benjamin M.** School gardens for California schools; a manual for teachers . . . Sacramento, W. W. Shannon, superintendent state printing, 1905. 79 p. illus. 8°. (State normal school, Chico, California. Bulletin no. 1, July 1905)

"Useful reference books and bulletins for school library": p. 50–53.

Bibliography: p. 57–74.

"Discusses the history of school gardens and their educational importance, the plant and its relations, plant propagation, instruction including aim and scope, practical work, correlative subjects, adaptation to school conditions, etc. The annotated bibliography of nearly three hundred titles is a summary of the literature of the subject up to 1905."

252. **Elford, Percy** *and* **Heaton, Samuel.** Practical school gardening. Oxford, Clarendon press, 1909. 224 p. 8°.

CONTENTS: 1. The garden. 2. Tools. 3. Preparation of the soil. 4. Sowing and planting. 5. Vegetable garden pests. 6. Herbs. 7. Salads. 8. How to make a hotbed. 9. Fruit culture. 10. Fruit-tree pests. 11. Flowers. 12. Insects and diseases which attack flowering and foliage plants. 13. Friends of the garden. 14. Weeds. 15. Calendar of gardening operations. 16. Nature calendar.

253. **Galloway, Beverly T.** School gardens; a report upon some cooperative work with the normal schools of Washington, with notes on school-garden methods followed in other American cities. Washington, Government printing office, 1905. 47 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Bulletin 160)

254. **Gang, E.** School gardens. *In* U. S. Bureau of education. Report of the Commissioner, 1898–99. p. 1067–84.

"This is one of the best accounts, especially from the historical standpoint, published."

255. **Greene, Maria L.** Among school gardens. New York, Charities publication committee, 1910. 388 p. 8°. (Russell Sage foundation publication)

Bibliography: p. 341–75.

CONTENTS: 1. Evolution of the school gardens. 2. Different kinds of school gardens. 3. Soil fertility. 4. Cost of equipment. 5. Planning and planting the garden. 6. After planting, what? 7. Some garden weeds. 8. School garden in vacation and in term time. 9. Some last things.

256. **Hemenway, Herbert D.** How to make school gardens; a manual for teachers. New York, Doubleday, Page & company, 1903. 107 p. 12°.

School garden bibliography: p. 97–107.

257. **Hochbaum, H. W.** Successful school gardens. Colorado school journal, 27: 11–14, November 1911.

258. **Kelleher, S. C.** School and home gardening. Manila, Bureau of printing, 1910. 45 p. illus. 8°. (Philippine Islands. Bureau of education. Bulletin no. 31, 1910)

A manual for the use of teachers in the Philippines, prescribing courses for the elementary schools and giving detailed instructions for the preparation, planting, and care of the school garden.

259. **Kilpatrick, Van Evrie.** Gardening in city schools. School work, 7: 106–10, October 1908.

260. **Livermore, Henrietta J.** School gardens, report of the Fairview garden association, Yonkers, N. Y. New York city, Russell Sage foundation, Department of child hygiene, 1910. 31 p. illus. 8°.

261. **Maccaughey, Vaughn.** School gardening in Hawaii as related to agricultural education. *In* National education association. Journal of proceedings and addresses, 1911. p. 1126–31.

262. **Miller, Louise Klein.** Children's gardens for school and home; a manual of cooperative gardening . . . New York, D. Appleton & co., 1904. 235 p. illus. 12°.

263. **Parsons, Henry G.** Children's gardens for pleasure, health, and education. New York, Sturgis & Walton company, 1910. 226 p. 12°.

"Books for the teacher": p. 194–97.

Part 1. "Deals with the theoretical considerations favoring the use of gardening for the educational development of children. The author emphasizes its value in lessening poverty, sickness, and inefficiency, in teaching economy of time and labor, in training for other occupations and for civic affairs, and in developing a sense of the dignity of work . . . Part 2. Deals with the practical equipment and management of a school garden, the seeds and tools needed, the preparation of the soil, planting and subsequent work, and the functions of sunlight, air, water, and earthworms in plant growth. The final chapter presents a list of books and government publications for teachers. The distinctive character of this book lies in its pedagogic attitude throughout."

264. **Rowe, W. S.** School gardening at Greenville, Ohio. Ohio educational monthly, 57: 49–56, February 1908.

265. **Skinner, Hubert M.** A discussion of school gardens . . . at the N. E. A. meeting at San Francisco, Cal., July 1911. [Hammond, Ind.] 1911. 13 p. 8°.

266. **Stebbins, Cyril A.** Potentiality of the school garden. *In* National education association. Journal of proceedings and addresses, 1911. p. 1131–37.

"Educationally the garden is a potent factor, for it not only educates but educates sanely, by taking into consideration the satisfaction of the racial body and the racial mind of the child."

267. **Weed, Clarence M.** *and* **Emerson, Philip.** The school garden book. New York, C. Scribner's sons, 1909. 320 p. 12°.

Bibliography: p. 315.

"This is intended as a general guide for teachers in directing school garden work and in utilizing its educational, economic, and social values in the training of children."

AGRICULTURE: TRAINING OF TEACHERS

268. **Abbey, M. J.** Normal school instruction in agriculture. Washington, Government printing office, 1909. 31 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular no. 90)

"In this circular a description is given of the agricultural course in the Mayville, North Dakota, state normal school, including a discussion of the place of agriculture in the normal school curriculum, methods of teaching, correlation, and other related subjects."

"If the normal schools generally shall fail to give adequate instruction along the industrial and vocational lines now demanded by the persistent sentiment of the people, they must be content to see this line of teaching preparation pass to other agencies not originally intended for normal work." p. 31.

269. **Bailey, Liberty Hyde.** The better preparation of men for college and station work. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1909. p. 25–32. (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 228)

270. ——— On the training of persons to teach agriculture in the public schools. Washington, Government printing office, 1908. 53 p. 8°. (U. S. Bureau of education. Bulletin, 1908, no. 1)

"List of references": p. 49–50.

An able discussion of the nature of the problem, the means of training teachers, and the general outlook and significance of normal work in the colleges of agriculture.

271. **Balcomb, Ernest Elwell.** Agriculture in normal schools: courses of instruction and financial support. *In* National education association. Journal of proceedings and addresses, 1907. p. 752–58.

272. ——— What has been done by normal schools and agricultural colleges for popular education in agriculture. *In* National education association. Journal of proceedings and addresses, 1907. p. 1069–75.

"This report is a summary of answers to letters to the presidents of each agricultural college, to each state normal school, and to certain other schools of the United States."

273. **Crosby, Dick J.** Training courses for teachers of agriculture. *In* U. S. Department of agriculture. Office of experiment stations. Yearbook, 1907. p. 207–20.

Reprinted, 1908.

"Results of an inquiry . . . concerning courses for teachers of agriculture in agricultural colleges, state normal schools, privately endowed colleges and schools, and county normal training schools in the United States. These are followed by a discussion of the essentials of training for teachers of agriculture and lines of future development in this work."

274. **Davis, Benjamin M.** Shall teachers be prepared to give instruction in elementary agriculture? Western journal of education, 11: 5–15, May 1906.

"Discusses the organization of agricultural education in the United States, agriculture in the elementary schools, work in Canada, N. E. A. report on industrial education in schools for rural [illegible]ties, work of the normal schools."

275. **Duggar, J. F.** Preparing teachers to give instruction in agriculture. *In* Southern educational association. Journal of proceedings, 1910. p. 142–46.

"The agencies at work in training teachers to give instruction in agriculture are enumerated, and it is stated that in fitting the teacher there must be imparted three distinct elements of success: (1) inspiration and a reasonable confidence in the importance of the end to be attained; (2) abundant subject-matter; (3) some slight instruction regarding methods of teaching agriculture."

276. **Johnson, D. B.** Agriculture in normal schools. *In* Conference for education in the South. Proceedings, 1910. p. 242–50.

A general review of the progress of secondary agricultural education in this country, followed by a description of the work in agriculture and domestic science in the Winthrop industrial and normal college, Rock Hill, S. C.

277. **Johnson, R. O.** Agriculture in the Chico normal schools. Western journal of education, 16: 126–33, March 1911.

278. **Kirk, John R.** Agriculture and domestic science in normal schools with special reference to preparing teachers for community work. *In* National education association. Journal of proceedings and addresses, 1911. p. 1152–55.

Discussion: p. 1155–56.

279. **Mutchler, Fred** *and* **Craig, W. J.** A course of study for the preparation of rural school teachers: nature study, elementary agriculture, sanitary science, and applied chemistry. Washington, Government printing office, 1912. 23 p. 8°. (U. S. Bureau of education. Bulletin, 1912, no. 1)

"A very important problem of popular education to-day is the better adaptation of the work of the rural schools to the needs of rural life. The schools must make the people more intelligent in regard to the life they are to live. Both for culture and practical utility the course of study in these schools should conform more closely to the environment of the child and the future work of the man. This can be brought about only by teachers educated and trained for the task."

280. **National committee on agricultural education.** The Davis bill in its relation to normal schools. *In* National education association. Journal of proceedings and addresses, 1909. p. 570–73.

281. Preparation of teachers for agricultural education. *In* National education association. Journal of proceedings and addresses, 1908. p. 294–312.

Contains: 1. Notes on the training of teachers of agriculture [by] E. E. Brown. 2. Cooperation of State agricultural colleges and State normal schools [by] K. L. Butterfield and A. Bayliss. 3. Cooperation between the U. S. Department of agriculture and the state authorities in promoting agricultural education [by] Dick J. Crosby.

282. **Seerley, Homer Horatio.** National aid in the preparation of teachers of agriculture for the public schools. *In* National education association. Journal of proceedings and addresses, 1909. p. 265–68.

Also in Journal of education, 70: 204–5, September 2, 1909.

283. **True, Alfred C.** Notes on the history of agricultural pedagogy in the United States. Delivered at twenty-eighth annual meeting of the Society for the promotion of agricultural science, 1907. [1907] 23 p. 8°.

284. ——— Training of extension teachers. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1910. p. 202–4.

Discussion: p. 204–11.

285. The work of the normal school in preparing teachers to teach agriculture. 1. [By] Charles Evans. 2. [By] W. L. French. *In* National education association. Journal of proceedings and addresses, 1908. p. 1194–99.

HIGHER AGRICULTURAL EDUCATION

286. **Addis, Wellford,** *comp. and ed.* The curriculum of the land-grant colleges. *In* U. S. Bureau of education. Report of the Commissioner, 1896–97. Washington, Government printing office, 1898. p. 427–56.

287. **Association of American agricultural colleges and experiment stations.** Proceedings, 1889–1910. Washington, Government printing office, 1889–1911. 23 v. 8°.

Published annually by the Department of agriculture, and contains much valuable material on the work of the agricultural colleges.

288. ——— **Committee on instruction in agriculture.** . . . A four years' college course in agriculture. [Summary of reports 1–5 and 8 of the Committee . . .] [Washington, Government printing office, 1906] 36 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular 69)

289. ——— **Committee on methods of teaching agriculture.** The relation of the natural sciences to agriculture in a four-year college course. [Washington, Government printing office, 1903] 15 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular no. 55)

"This report contains the recommendations of the committee with reference to the time to be devoted to work in physics, chemistry, botany, geology, physiology, and zoology in a four-year college course."

290. **Ayres, B.** Place of the agricultural and mechanical college in the educational scheme of the South. Southern educational review, 2: 485–93, December 1905.

291. **Bailey, Liberty Hyde.** Place of agriculture in higher education. Education, 31: 249–56, December 1910.

292. **Brannon, Melvin A.** Higher education and the farm. Educational review, 38: 451–60, December 1909.

293. **Butterfield, Kenyon L.** The social phase of agricultural education. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1904. p. 56–61 (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 153)

"From the point of view of the agricultural college. A presentation of the rural problems and of the ways in which the agricultural college may fulfill its function by helping to solve them."

294. **Crosby, Dick J.** Special and short courses in agricultural colleges . . . Washington, Government printing office, 1903. 59 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 139)

"A summary of information on the special and short courses in agriculture and related subjects offered at the land-grant colleges. Brief statements are made concerning the date of opening, length, nature, admission requirements, and cost of attending these courses."

295. **Dabney, Charles W.** Land-grant and other colleges and the national defense . . . [Washington, Government printing office, 1899] 15 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular no. 40)

296. **Hamilton, John,** *ed.* College extension in agriculture. Discussions before the Graduate school of agriculture, at the Iowa state college, Ames, Iowa, July 4–27, 1910 . . . Washington, Government printing office, 1910. 86 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Bulletin 231)

Contains: 1. L. E. Reber: University extension. 2. E. E. Sparks: University extension difficulties. 3. J. Hamilton: The status of agricultural extension in the United States and in other countries. 4. H. C. Price: The sphere of agricultural extension. 5. A. M. Soule: The sphere of agricultural extension. 6. K. L. Butterfield: Problems of agricultural extension work. 7. J. H. Miller: How to make effective the teaching of college and institute. 8. A. E. Burnett: American system of agricultural extension—organization. 9. P. G. Holden: American systems of agricultural extension—methods and equipment. 10. G. I. Christie: American system of agricultural extension—methods and equipment. 11. T. F. Hunt: American system of agricultural extension—qualifying teachers.

297. **Hamilton, John.** Progress in agricultural education extension. . . Washington, Government printing office, 1910. 12 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Circular 98)

298. **Hamilton, John.** The present status of extension work in the United States. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1910. p. 87–92.

Supplement to Report of Committee on extension work, p. 81–87.

299. **James, Edmund J.** The origin of the land grant act of 1862 (the so-called Morrill act) and some account of its author, Jonathan B. Turner. Urbana-Champaign, University press, 1910. 139 p. 8°. (University of Illinois. The University studies, vol. iv, no. 1)

300. **Jordan, Whitman H.** Function and efficiency of the agricultural college. Science, n. s. 34: 773–85, December 8, 1911.

301. **Keffer, Charles A.** What the college of agriculture can do to promote the teaching of agriculture in the rural schools. *In* Conference for education in the South. Proceedings, 1910. p. 233–42.

Discusses the place of the college of agriculture in the school system of the state, college extension in agriculture, and the creation among voters of a sentiment favorable to the teaching of agriculture. The author emphasizes the place of the college of agriculture as a part of the public school system and its work in aiding the public schools.

302. **Kerr, W. J.** Some land grant college problems. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1910. p. 37–51.

303. **Medd, John C.** Agricultural education in the United States. Nineteenth century, 60: 209–306, August 1906.

"A popular historical account dealing mainly with agricultural colleges."

304. **Monahan, Arthur C.** Opportunities for graduate study in agriculture in the United States. Washington, Government printing office, 1911. 16 p. 8°. (U. S. Bureau of education. Bulletin, 1911, no. 2)

"This bulletin, describing the opportunities in the United States for graduate study in agriculture and those closely allied sciences which have a direct application in agriculture, is a result of an inquiry made by the Bureau of Education in cooperation with the Committee on graduate study of the Association of American agricultural colleges and experiment stations."

305. ——— Undergraduate or collegiate courses in agriculture in the State colleges of agriculture in the United States: prepared especially for foreign students. Washington, Government printing office, 1911. 13 p. 8°. (U. S. Bureau of education. Supplement to bulletin 1911, no. 2)

306. **Nelson, Knute.** Colleges for the benefit of agriculture and mechanic arts. . . Washington, Government printing office, 1907. 7 p. 8°. (59th Cong. 2d sess. Senate. Doc. 189)

307. **Russell, H. L.** The agricultural extension service of the Wisconsin college of agriculture. *In* Conference for education in the South. Proceedings, 1910. p. 210–15.

308. **Snyder, J. L.** Entrance requirements for land-grant colleges. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1909. p. 65–68. (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 228)

Discussion: p. 68–71.

309. **Storms, Albert B.** The distinctive work of the land-grant colleges: Their function, scope, and organization. *In* Association of American agricultural colleges and experiment stations. Proceedings, 1909. p. 51–57. (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 228)

310. **Thompson, William Oxley.** How far should or may land-grant colleges engage in teaching elementary subjects not generally recognized as belonging to the college curriculum? *In* Association of American agricultural colleges and experiment stations. Proceedings, 1904. p. 79–82. (U. S. Department of agriculture. Office of experiment stations. Bulletin no. 153)

Discussion: p. 82–91.

311. **True, Alfred C.** Improvement in college courses in agriculture. Educational review, 19: 169–74, February 1900.

312. ——— Some types of American agricultural colleges. *In* U. S. Department of agriculture. Year-book, 1898. p. 63–80.

"The types discussed are colleges having only courses in agriculture, colleges with courses in agriculture along with those in mechanic arts and other subjects, and colleges of agriculture forming a part of universities. The chief characteristics of the different types are brought out by descriptions of a number of institutions."

313. **United States. Bureau of education.** Agricultural and mechanical colleges. *In its* Reports of the Commissioner, 1880–1911. Washington, Government printing office, 1881–1912. 31 v. 8°.

Largely statistical.

314. ——— ——— Federal laws, regulations, and rulings affecting the land-grant colleges of agriculture and mechanic arts. Washington, Government printing office, 1911. 13 p. 8°.

315. ——— ——— General laws relating to agricultural and mechanical land-grant colleges. Washington, Government printing office, 1905. 90, 39–226 p. 8°.

Reprint of chapter 1 from Report of the Commissioner of education for 1902, and chapter 2 of Report for 1903.

316. ——— ——— New buildings and changes in the course or in the methods of instruction [of agricultural and mechanical colleges] *In its* Report of the Commissioner, 1898–99. Washington, Government printing office, 1900. p. 1748–88.

317. ——— **Congress. Senate. Committee on agriculture and forestry.** Agricultural colleges and experiment stations. Hearing before the Committee on agriculture and forestry, United States Senate, on the bill S. 4676 to provide an increased annual appropriation for the support of colleges for the benefit of agriculture, etc . . . Washington, Government printing office, 1910. 14 p. 8°.

318. ——— **Office of experiment stations.** Federal legislation, regulations, and rulings affecting agricultural colleges and experiment stations. Revised to March 15, 1911. [Washington, Government printing office, 1911] 24 p. 8°. (Circular 111)

319. ——— ——— Institutions in the United States giving instruction in agriculture . . . [Washington, Government printing office, 1908] 10 p. 8°.

320. ——— ——— Statistics of land-grant colleges and agricultural experiment stations. *In its* Report, 1910. p. 271–314.

These statistics have been published annually since 1896, with the exception of the year 1908, and have been issued as circulars, bulletins, or reprints from the Annual reports of the Office of experiment stations.

321. **Waters, H. J.** The duty of the agricultural college. Science, 30: 777–89, December 3, 1909.

"This is the inaugural address of the president of the Kansas college, in which he deals with the various functions of the agricultural college in relation to students enrolled in its courses, to agricultural extension work, and to research work in agriculture and home economics."

322. **Wickson, Edward James.** The agricultural college and its relationship to the scheme of national education. *In* National education association. Journal of proceedings and addresses, 1907. p. 1041–48.

An address by the Dean of the College of agriculture and Director of the Agricultural experiment station of the University of California, in which he concludes that the relationship of the agricultural college to the national system of education "is that of leadership in the most important work of rendering the curricula of the lower schools more rational; their materials better suited to their environment and more effective in helping the youth to find himself in life-work and associations. These institutions more than any others, perhaps, are so placed that they can lay a firm hold upon science and higher branches of learning with one hand and upon the essentials of industrial efficiency and right living with the other."

AGRICULTURAL EDUCATION: FOREIGN COUNTRIES

General

323. **Hamilton, John.** Agricultural instruction for adults in continental countries. Washington, Government printing office, 1905. 32 p. 8°. (U. S. Department of agriculture. Office of experiment stations. Bulletin 163)

"Includes a discussion of systems of itinerant instruction in agriculture in Austria, Belgium, Bulgaria, Denmark, France, Hungary, Italy, Netherlands, Prussia, Russia, and Sweden, together with notes on some fixed agricultural schools for adults."

324. **Jenkins, H. M.** Report on agricultural education in North Germany, France, Denmark, Belgium, Holland, and the United Kingdom. London, Eyre and Spottiswoode, 1884. 442 p. 8°. (Royal commission on technical instruction. v. 2.)

325. **Vuyst, Paul de.** L'enseignement agricole et ses méthodes. Bruxelles, A. Dewit, 1909. 354 p. 8°.

"The information brought together in this manual is intended for teachers of agriculture and students of education. It includes a systematic statement of the different agencies for agricultural education in the principal countries of Europe and North America, and a discussion of methods of teaching and other means of disseminating agricultural information. There are numerous references to the literature of agricultural education and one chapter is devoted entirely to bibliographies."

Argentine Republic

326. **Argentine Republic. División de enseñanza agrícola.** Reglamentación é instrucciones para la contabilidad administrativa y agrícola de las escuelas de agricultura. Buenos Aires, 1909. 151 p. 8°.

327. **Huergo, Ricardo J.** La enseñanza agricola; trabajo presentado al 4° congreso cientifico de Chile realizado el 25 de diciembre de 1908 por el gefe de la Division de enseñanza agricola . . . Buenos Aires, 1909. 130 p. 8°.

Austria

328. **Zimmerauer, Friedrich R. von.** Agricultural schools in Austria. *In* U. S. Bureau of education. Report of the Commissioner, 1901. p. 88–102.

CONTENTS: General review. I. Higher agricultural and forestry schools: (*a*) University of Vienna; (*b*) University of Krakow; (*c*) Technological university of Vienna. II. Secondary agricultural schools: (*a*) Agricultural colleges; (*b*) forestry schools; (*c*) wine, fruit, and gardeners' schools; (*d*) brewers' school. III. Lower agricultural schools: (*a*) Day schools; (*b*) winter schools; (*c*) forestry schools; (*d*) dairy schools; (*e*) schools for special branches, such as fruit, wine, flax, and hops; (*f*) schools for brewers and distillers. Statistics.

Canada

329. **Canada. Parliament. Select standing committee on agriculture and colonization.** The Macdonald movement for rural education; evidence of James W. Robertson . . . before the Select standing committee on agriculture and colonization, 1906–7 . . . Ottawa, Printed by S. E. Dawson, 1907. [183]–206 p. plates, map. 8°.

330. **Iles, George.** Robertson's work for the training of Canadian farmers. Review of reviews, 36: 576–84, November 1907.

331. **James, C. C.** The teaching of agriculture. *In* Ontario agricultural and experiment union, 29, p. 75–94. 1907.

332. **Ontario. Education department.** Agricultural education. *In its* Education for industrial purposes . . . Toronto, L. K. Cameron, 1911. p. 312–23.

333. **Robertson, James W.** Education for rural life in Canada. *In* Conference for education in the South. Proceedings, 1906. p. 100–13.

Also in Southern educational review, 3 : 28–42, October 1906.

334. **Robertson, James W.** The Macdonald movement for the improvement of rural conditions in Canada. *In* American association of farmers' institute workers. Proceedings, 1908. p. 10–16.

335. **Sherwood, Herbert Francis.** Children of the land: the story of the Macdonald movement in Canada. Outlook, 94: 891–901, April 23, 1910.

Denmark

336. **Copenhagen. K. Veterinaer og landbohøjskole.** Den Kongelige veterinaer og landbohøjskole, 1858–1908 . . . København [I kommission hos A. Bang] 1908. 593 p. illus. 4°.

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○

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CURRENT EDUCATIONAL TOPICS

No. I

I. Illiteracy in the United States and in Europe
II. Industrial Supervisors in Georgia
III. New Phases of Education in Buffalo, N. Y.
IV. Juvenile Labor Bureaus and Vocational Guidance in Great Britain
V. The Educational Museum of the St. Louis Public Schools

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CURRENT EDUCATIONAL TOPICS.

I. ILLITERACY IN THE UNITED STATES AND IN EUROPE.

Illiteracy is a measure of the extent of elementary education in a nation, direct and universal in its application. For this reason special emphasis is placed upon this item in the census of the United States, which has become a model in respect to its presentation as well as in the discussion of its age and race bearings, the latter being one of fundamental importance.

The following summaries present the main results of the inquiry as set forth in the United States census of 1900 and in the returns for the census of 1910:

Population and illiteracy.

	Population.	Per cent of total population.	Population 10 years of age and over.		
			Total.	Unable to read and write.	
				Number.	Per cent.
1900.					
Native whites	56,595,379	74.5	41,236,662	1,913,611	4.6
Foreign-born whites	10,213,817	13.4	10,014,256	1,287,135	12.9
Colored	9,185,379	12.1	6,698,906	2,979,323	44.5
Total	75,994,575	100.0	57,949,824	6,180,069	10.7
1910.[1]					
Native whites	68,386,422	74.4	50,989,343	1,535,530	3.0
Foreign-born whites	13,345,206	14.5	12,944,215	1,650,519	12.8
Colored	10,240,638	11.1	7,646,712	2,331,559	30.5
Total	91,972,266	100.0	71,580,270	5,517,608	7.7

[1] Subject to revision.

COMPARATIVE VIEW.

The preliminary announcements of the returns under this head for the Thirteenth Census have already excited discussion and inquiry as to the relative standing of the United States, as indicated by this vital condition. The inquiry is enforced by reference to the enormous expenditure of money and energy upon the work of public education.

The significance of illiteracy as a measure of popular enlightenment depends upon many conditions. Chief among these are the extent, racial character, and density of the population, since these conditions determine in great measure the success or failure of the endeavor to bring all the children of a nation under instruction. It follows, also, that the comparison of great nations with small nations, in this respect, carries little weight. For example, conditions in Denmark, with its compact population of two and a half million, in which illiteracy has been practically eliminated, may properly be compared with individual States of the Union, but signify little when the entire Republic, with its vast extent and population, is considered. For such comprehensive view the United States must be brought into relation with other nations great by reason of their populations and world influence. The significance of the comparison depends further upon the provision for public education. From this standpoint nations may be considered in two groups; the first group comprising nations having well-organized systems of public instruction; the second group, nations in which public instruction is not yet organized or has not yet passed the theoretic stage. Obviously the standard for the United States must be looked for in the first group.

The census of the United States, as already indicated, shows every 10 years the status of the country with respect to illiteracy, considering the population by age periods; and the discussion of its bearing upon the school provision is based upon the degree of illiteracy in the population above 10 years of age. This exact basis is not attainable, as a rule for other countries. In some instances the ratio of illiteracy is drawn from official marriage registers or from the record of army recruits, or from both these sources; in still other cases it is determined for age periods, not by exact count, but by statistical methods.

Within the limits defined, the United States belongs to the group of nations comprised in the following tables:

Density of population.

Nation.	Year.	Population.	Number per square mile.
France	1909	39,376,000	189.50
German Empire	1910	64,903,423	310.40
Great Britain	1910	41,098,401	462.80
United States	1910	91,972,266	30.09

According to the latest official information the status of the four nations here considered as regards illiteracy is as follows:

Illiteracy in certain countries.

Country.	Year.	Per cent of illiterates.	Basis of estimate.
France	1906	11.4	Population above 10 years of age.
German Empire	1905	.03	Army recruits.
Great Britain	1904	1.5	Marriage register.
United States	1910	7.7	Population above 10 years of age.

With reference to France it should be noted that the population above 10 years of age in 1906 included a large proportion of people who had never had the benefit of the compulsory school laws, since these were not enacted until 1882. In 1904 the records of army recruits in France, all of whom had been subject to the compulsory laws, showed only 3.5 per cent of illiterates.

The nations of the second group present the extremes of culture and distinction in the realms of science and literature, with high degrees of illiteracy. The following table shows their status in the latter respect, according to the latest census or official estimates, population above 10 years of age alone considered:

Nation.	Year.	Per cent of illiterates.
Austria	1900	26.2
Hungary [1]	1900	40.0
Italy	1901	48.0
Spain	1900	58.7
Russia	1897	70.0

[1] Including Croatia and Slavonia.

The lowest ratio for the group, i. e., 26.2 per cent, exceeds that for the Southern States of the Union, in which the greater part of the colored population is massed. In 1900, 23 per cent of the population above 10 years of age in those States were illiterate; for the white population, alone, the ratio was only 11 per cent. The progress of the colored people in respect to education, as indicated by the preliminary summary from the returns for 1910, makes it certain that the ratio on the total population of the South was greatly reduced during the decade 1900–1910. Undoubtedly there has also been a decrease of illiteracy in the European nations of the group here considered, and especially in Hungary and Italy. Throughout this group, however, the progress of popular education is hindered by obstacles greater than are encountered in any part of the United States.

There remain in Europe several small nations in which illiteracy has been reduced to a minimum or practically eliminated. They may justly be compared in this respect with individual States of the Union having approximately the same population. Such comparisons, however, are merely suggestive, as they are necessarily made from different standpoints. For the European nations, in each case, the basis is the record of army recruits; for the selected States, the basis is the population above 10 years of age. Within these limits the comparison between the smaller kingdoms referred to and the States nearest them in population, census of 1900, stands as follows:

Nations.	Army recruits—per cent of illiterates.	States.	Per cent of illiterates in population above 10.	
			Total.	Native whites.
Denmark	0.2	Indiana	4.6	3.6
The Netherlands	1.4	New York	5.5	1.2
Sweden	.3	Illinois	4.2	2.1
Switzerland	.5	Massachusetts	5.9	.8

In the case of the foreign nations in the foregoing table, only the adult male population is represented, which possibly gives a somewhat more favorable showing than would be the case if the entire population was included, since the military system itself furnishes a motive for the elementary instruction of men which does not affect women. It should be noted, however, that in three of the foreign kingdoms elementary education has long been compulsory, and the compulsion is rigidly enforced, so that no one escapes the obligation of learning to read and write. In the Netherlands a compulsory law was not passed until 1900, but the importance attached to education has hitherto furnished parents a sufficient motive for securing the instruction of all their children; for instance, there is abundant provision of industrial and technical schools, including schools of household industry for girls, but only children who have passed examination in the elementary subjects are admitted to this order of training. Hence it may be said that the favorable view of these nations with respect to illiteracy derived from the record of army recruits is confirmed from many other sources. The condition of illiteracy in the four States selected for this comparison is presented from the same standpoints as in the previous comparisons. The lower proportion of illiterates in the native white population, as compared with the total population, emphasizes anew the fact that illiteracy in the United States is a burden imposed by the presence of large proportions of foreign born and of colored people. The decline in illiteracy for these two classes, as shown by the comparison of the census of 1900 with that of 1910, is proof of the steady progress of the Nation toward the plane of the highest as regards popular intelligence.

II. INDUSTRIAL SUPERVISORS IN GEORGIA.

The financial limitations to which county superintendents are usually subjected and the extensive territory which they must often cover render the work of rural supervision exceedingly difficult in many portions of the country. One of the most promising efforts to ameliorate the conditions is that of Mr. N. O. Nelson, of St. Louis, Mo. He is providing at his own expense for limited periods industrial supervisors as assistants to the county superintendents in a few counties in Georgia and Louisiana. The purpose, operation, and results of his efforts in this direction are thus described by Mr. Nelson:

> In the summer of 1909 consent was obtained of the superintendent and school board of Putnam County, Ga., to accept an industrial teacher for the rural elementary schools of the county. The teacher came in September. She was thoroughly experienced in country teaching, familiar with cooking, sewing, and home-keeping; had managed successfully a small but first-class farm; was modest, tactful, and industrious; but owned no diploma. She was placed under the direction of the superintendent, but with the understanding that she should manage for herself, he lending such assistance as he could. The plan was to visit the schools in succession, spending some days in each district on the first round. At the beginning she was taken around and introduced by the superintendent. She became acquainted with the teacher and the pupils, talked to the girls about sewing and cooking; to the boys about shopwork, a garden, cleaning up, and improvements to the house and the grounds. She helped with the teaching, talked clubs, library, and wherever possible arranged for some domestic science. She was invited to the homes, took a hand in the kitchen, talked crops and stock to the farmer, and chickens, vegetables, and flowers to the mother. This was repeated on following visits. Soon canning clubs and school improvement clubs were organized; meetings were held; a library fund was started; socials and suppers were given to raise money and get together; a new schoolhouse was projected; longer school term considered; and more homes were visited. There was usually a cordial response; if not on the first visit, then at the next. It was not long before she was very much in demand, freely sent for, and entertained. She was not an instructor, but a visitor, adviser, and leader.
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> The plan proved acceptable and has needed no changes. The superintendent and board regarded it an important addition to the schools. Cooking and sewing were started in many places, additional tax was voted, the teachers were helped. Perhaps the most important was the awakening of social interest and the intercourse with the families at home. For the second year the boys' and girls' clubs were organized to make a joint exhibit at the county fair, with a liberal prize list. In one consolidated school a full shop and kitchen were

installed, money was raised by subscription for additional room, and an industrial teacher employed. Social gatherings and public meetings became common, the schoolhouse became a social center. Doing things became fashionable. For the third year the board unanimously took over the teacher and assumed the salary, which includes the very small expenses.

Before the end of the first year applications had been received from other counties. Three additional teachers, of qualifications about similar to the first, were added. One of these was placed in Putnam County, one in Oconee, one in Douglas, and the first teacher went to Greene. The same course was followed in the new counties with the same results. The superintendents were exceedingly helpful, gracious, and approving. For the third year, Morgan, Jones, and Hancock Counties were supplied, a number of applications being still on the waiting list. The original teacher was made supervisor to visit and help the others. There have been two gatherings of all the teachers and some of the superintendents to become acquainted and compare notes. No change in the plan has been suggested. There are no rules; no statistical reports are required, but there is much correspondence. The teachers are furnished free to the counties for two years, after which the county assumes the charge.

III. NEW PHASES OF EDUCATION IN BUFFALO, N. Y.

1. DOMESTIC EDUCATION IN IMMIGRANT HOMES.

From the first report and other documents of the Buffalo committee of the North American Civic League for Immigrants, it is learned that the organization has adopted a new way of teaching immigrant women how to become good housewives. The method consists of sending " domestic educators " directly into the homes of such families as are willing to receive them. There the domestic educators show the housewife how to keep her home clean, how to cook, how to vary the diet, how to get the most for her money, how to prevent sickness, how to sew, how to take care of the children; in fact, all or nearly all phases of home making are taken up and thoroughly demonstrated. The work started September 1, 1911, in charge of Mrs. A. L. Hansen, who now has a staff of 3 paid workers and 12 volunteer assistants. The territory is divided into districts, apportioned among the paid workers, who supervise the volunteers. Of the 12 who are giving their services without monetary reward, 6 are working directly with the families, 4 are teaching classes of domestic economy for girls, 2 are waiting for special classes to be formed, and Dr. Mallory, a woman, is giving special lessons in sex hygiene in some of the classes.

The importance of domestic education for immigrants is thus summarized by the Buffalo committee:

> Amelioration of the home and living conditions of immigrant families is at the center of the problem of assimilation. Better homes mean better citizens. More serious than the present overcrowding, bad air, poor food, sickness, and the rest is the underlying hygienic and domestic ignorance. Hitherto no adequate steps have been taken to replace this ignorance by intelligence. To be reached effectively for this purpose these immigrants must be reached in their homes.

Regarding the practical results achieved the most recent available report by Mrs. Hansen says, in part:

> It has been found that the teaching given to the mother of a family is passed along to her neighbors and relatives, especially the teaching of food principles. It very frequently happens that a woman's neighbors and relatives are in her home when the educator arrives, and they receive the benefit of the instruction. The news seems to fly along some streets that the educator is in a certain home, and women come flocking into the house to see what is going on, many of them bringing garments to be fitted or altered.

Cereals are now used in 50 homes where a month ago they were unknown. The use of coffee in all the homes the educators are visiting is on the decrease, and cocoa is used in its stead, while fresh milk has been substituted for canned milk. Stews and nourishing soups have taken the place of boiled cabbage and fried pork. Women are baking their own bread and cookies, instead of buying a most inferior quality at the nearest bakeshop. Some families who were left as hopeless by several other philanthropic agencies have been induced to clean up their homes under the educators' instructions. There are numberless children now receiving proper hygienic care who before the educators' visits were strangers to soap and water. Prospective mothers have benefited greatly by the instruction given; several babes born this month have found carefully prepared clothing awaiting them, whereas their elder brothers and sisters found only an old shirt.

Hardly a day passes that the dispensaries are not visited by several patients sent in by the educators.

Lessons in sewing have proved very attractive to a large number of women. The educators have found that after cutting and fitting one garment for a woman, she can generally manage a second very well alone. The children are going to school with buttons on their dresses, whereas before the garments were pinned; the stockings are getting attention both as to mending and washing, whereas previously there was only neglect.

Through cooperation with the Charity Organization Society 20 women are taught how to buy economically. The Charity Organization Society committee have given the grocery order, or cash, for the family into the care of the educators. It has been found that after the aid has been discontinued the women still buy as instructed. In a number of these families regular instruction by the educator can soon be discontinued altogether.

The class work has proved far-reaching. The educators have found that the girls carry home the instructions given in class, so that for every girl in class a family is reached. The classes in sewing are taught hygiene and economy as well as sewing. The cooking classes have been given instruction in preparation of cocoa, cereals, toast, and corn-meal bread. At each lesson the food principle of the food under preparation is given and the girl shown the benefit derived from using these foods.

The classes now number 10 and the total number of pupils 116. As only 3 of these children are in families visited, 113 additional families are thus affected through classes, making a total of 190 families reached.

The families dealt with are usually referred by the Charity Organization Society, social service departments of hospitals, settlements, the District Nursing Association, clergymen, and neighbors. In these families the domestic educators confine themselves to constructive educational work. Where material relief is necessary it is supplied by the Charity Organization Society. Where sickness or ailments exist the District Nursing Association, the tuberculosis bureau of the health department, dispensaries, and hospitals are called upon. Duplication is avoided. Cooperation is the watchword.

2. BUFFALO'S SCHOOLS OF CITIZENSHIP.

According to the Buffalo committee of the North American Civic League for Immigrants, two-thirds of the population of Buffalo are either foreign born or of foreign parentage. The committee claims for Buffalo the distinction of being "the first city in the United States to take the forward step of placing citizenship education on a clearly recognized and distinct basis." The committee outlines Buffalo's immigrant problem, in the solution of which its schools of citizenship are designed to render aid, as follows:

> These immigrants in the Buffalo community are at once a liability and an asset. Most of the immigrants are poor to the point of destitution when they come here. They have been accustomed to agricultural life. They have known only undemocratic government. Their traditions and their whole point of view are foreign. They are dependent on an alien tongue.
>
> Because of their poverty they have to find the cheapest living quarters. Because they have had only agricultural experience, in the city they are fitted only for common labor and so they get only minimum wages. Minimum wages mean that they must continue to live in the poorest quarters, which in turn means overcrowding and disease. Long, grinding toil, overcrowded homes, and the lack of wholesome recreation inevitably produce a crop of saloons, and the saloons lead to drunkenness, moral degeneration, and crime. Ignorance of democratic government retards the development of intelligent citizenship. Foreign traditions and viewpoint, and dependence on an alien tongue, result in segregation in semiisolated colonies. This segregation aggravates and perpetuates the other evils. Buffalo's immigrants are in the community, but not of it. For purposes of progressive citizenship they are in large degree a dead weight. In short, they are a serious civic liability.
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> The single fact, however, that these immigrants provide half of the community's common and semiskilled labor shows that even under present conditions they are an asset of great value. The city's industries are largely dependent upon them. Their present value as an asset is small in comparison with their potential value. They are capable of being developed into intelligent, alert citizens, who, instead of in many ways holding the community back, will contribute actively to its advance. For the community as a whole, improvement of the conditions of the city's immigrants means a gain in community coherency, strength, and effectiveness.

Independently of the economic problem involved, the civic condition of the immigrant is susceptible of improvement through education, and this angle of attack, among others, has been adopted by the Buffalo committee by the establishment of a specialized school, which it describes as follows:

> Under present conditions the proportion of immigrants who become naturalized citizens is very small. The proportion of those naturalized who have an adequate understanding of the meaning and obligations of citizenship is still smaller.

The New York-New Jersey committee has for some time been working on a plan for establishing schools of citizenship to deal with this situation.

The Buffalo committee proposed to the department of public instruction last spring that it try some citizenship classes in the evening schools. The department agreed to be responsible for supervision if the committee would bear all expenses except the cost of heat and light. The experiment was made on this basis, with the cooperation of the Young Men's Christian Association, which provided part of the teachers. The classes were held in May and June. Approximately 250 Polish and Italian young men were given instruction in naturalization and citizenship, combined with English.

Though the difficulties involved in the entire newness of the undertaking were many, the experiment was regarded as on the whole so successful—thanks chiefly to the fact that Principals John J. Walsh and Charles L. Ryan were constantly at the helm—that the department decided to make citizenship instruction a permanent and regular part of the evening school system. Last fall classes of this sort were organized in the majority of public evening schools in immigrant districts.

Buffalo is the first city in the United States to take the forward step of placing citizenship education on this clearly recognized and distinct basis.

Inasmuch as this departure is closely connected with the evening school and extension work of the department of public instruction, and as this work as a whole is such a vital factor in the Americanization of the city's immigrant population, the committee has made the following recommendations, with a view to getting the largest profits from this part of Buffalo's educational machinery:

1. Perfecting the organization of the instruction in citizenship.
2. Extending the teaching of English as far as possible and raising it to the maximum of efficiency.
3. Lengthening the evening school season to the degree that the attendance warrants.
4. Making use of school buildings every week-day evening by organizing two-evening and three-evening groups of classes and holding on Saturday evenings neighborhood gatherings on the social-center plan.
5. The appointment of a director of evening, vacation, and other extension work, to give all his time to these matters.

Supt. Emerson has expressed his approval of these suggestions, and his intention of putting them into effect as soon as possible. The department's budget for the ensuing year provides for requisite appropriations.

IV. JUVENILE LABOR BUREAUS AND VOCATIONAL GUIDANCE IN GREAT BRITAIN.

In Great Britain the problem of juvenile labor has reached the same stage as in the United States, hence special interest attaches at this time to measures adopted by British authorities to conserve and direct the future working force of the nation. These measures have been excited by the alarming increase in the number of the unemployed.

Repeated investigations have proved that the idle army is constantly recruited from the ranks of the young who are not fitted for skilled labor of any kind. As regards the children of the poor and the shiftless, education and labor present, in fact, two aspects of the same problem. This relation is now clearly recognized in Great Britain, and legal measures have been taken to use this relation for the benefit of juvenile workers.

By the labor exchange act of 1909, authority was given to the board of trade to establish and maintain labor exchanges; to assist exchanges established by public bodies or by private agencies; to make general regulations for the management of labor exchanges established or assisted by the board; and also to establish and support advisory committees in connection with the management of labor exchanges. The education (choice of employment) act for England which went into effect November 28, 1910, authorized the local education authorities "to make arrangements, subject to the approval of the board of education, for giving to boys and girls under 17 years of age assistance with respect to the choice of suitable employment, by means of the collection and the communication of information and the furnishing of advice."

As a result of the two measures the board of trade was brought into direct contact with the educational authorities, which in many places had already set up a system of labor exchange in connection with the public schools. After much deliberation, a joint memorandum was issued on the part of the two central authorities, the board of education and the board of trade, determining their relations in respect to juvenile employment. The memorandum provided that the right of directing pupils, boys and girls, in regard to employment, for 6 months after the close of their school life, should be reserved to the education authorities.

This agreement not only saved the employment agencies already established by the school authorities, but recognized their preeminent fitness for organizing the vocational guidance of the young. The Scotch education act of 1909 had previously empowered local education authorities to take measures for the industrial guidance of children.

In accordance with this official action juvenile labor bureaus are being established in all the large cities of Great Britain, either directly by the education authorities or by other bodies with which the former cooperate. The general conduct of the bureaus, which varies but little in different cities, will be best understood by reference to typical examples.

THE MOVEMENT IN BIRMINGHAM.

Birmingham, a great manufacturing center, numbering more than 570,000 inhabitants, was one of the first cities to take action in respect to the vocational guidance of the young. Widespread attention was called to the subject by public meetings and by a circular letter emanating from church dignitaries, members of Parliament, labor leaders, and employers. One result of this action was the appointment of a subcommittee of the Birmingham education authorities to devise measures for assisting pupils in the choice of employment. Before the committee had completed its work, the labor exchange act was passed, and the recommendations were carried out in agreement with the board of trade. The juvenile employment bureau was organized by the education committee as part of the British Board of Trade national employment system. The bureau and its officials are under the supervision of a central committee. Local exchange centers are established to record and fill *local* vacancies, acting always in advice with the central committee. There is a " Central Care Committee " organized as a subcommittee of the education authority, and including six representatives of that body, four social workers, four teachers, four employers, and four trade unionists, together with the superintendent of the Birmingham Labor Exchange, and the medical inspector of schools.

The British Board of Trade meets all expenses incurred in connection with the employment bureau, the head of which is appointed by that body after consultation with the local education authorities. The work of teachers in finding situations for boys and girls is encouraged, while employers are urged to notify vacancies to the employment bureau, so that they can be filled by exchange officials.

At the time the system was adopted it was estimated that in Birmingham 8.500 children leave the schools annually, of whom 4,500 are boys; that there were in Birmingham 35,900 children less than

17 years of age who had left school, of whom 800 were less than 14, 11,500 between 14 and 15, 11,600 between 15 and 16, and 12,000 between 16 and 17. These all belonged to the laboring classes; and while the number who were in need of responsible guidance was not exactly known, experience showed that they must form a very large proportion of the total number.

EDUCATIONAL INFORMATION AND EMPLOYMENT BUREAU, EDINBURGH.

The school board of Edinburgh, like the council of Birmingham, established a system of labor exchanges in the interests of juvenile employees before there was any legislation on the subject. The work was started by the school board; employers, organized trades and crafts, religious, social, and other welfare agencies joined in its support. Their efforts at first were directed to promoting attendance at continuation schools. In 1908 the board took measures to utilize the understanding and cooperation thus brought about for the establishment of an educational information and employment bureau.

After the passage of the labor-exchange act, this bureau became a branch of the labor exchange, but housed in the school-board offices, and managed in connection with the education system of the city. All matters pertaining to the employment of persons between the ages of 14 and 17 were transferred to the juvenile department at the school-board offices. The advisory committee formed originally by the school board continues to maintain oversight of the employment, the continuation education, and the general welfare of children and youth.

This advisory council, which is an invaluable feature of the system, comprises the members of the school board (two of whom are women), a representative of the board of trade, and representatives of the town council, chamber of commerce, trade associations, local trade unions and educational trusts, and head teachers of day and continuation schools.

During the four school years (1906–7 to 1909) covered by the latest report of this work in Edinburgh, the enrollment of pupils at the continuation schools increased by 136 per cent; that is, from 3,722 (in 1905–6) to 8,789 in the last year. The school board, supported by the labor bureau and by the advisory council, has been pushing energetically in the direction of enrolling the 7,000 or more additional young people, between the ages of 14 and 17, who are receiving no instruction either in subjects of general education or in the technical principles of their daily occupations.

The report shows also steady progress in the difficult undertaking of placing young workers in suitable employment. This requires the confidence and support of employers on the one side, and on the other a willingness to be guided on the part of the parents and the children needing the services of the bureau.

In the summer of 1909, or 14 months after the present organization was effected, 4,270 pupils were reported as leaving the ordinary day schools. Of this number 3,074 stated their intention of enrolling in continuation classes. A third of these (1,129) made application for employment, and of this number 740 were placed, through the agency of the bureau, in suitable employment. The positions included 60 different trades, also office work and miscellaneous business.

MAGNITUDE OF THE PROBLEM IN LONDON.

The problem of juvenile labor in London presents special difficulties by reason of its magnitude and racial complications. The London county council, the education authority for the "inner ring" of the metropolis, through its special committee deals with a population of 4,750,000. The entire school population, in round numbers 887,000 children, is scheduled and under the supervision of school attendance officers. Consequently the status of each child as regards school attendance and living conditions is known.

The need of juvenile labor exchanges has long been recognized in the metropolis, and several private agencies have undertaken the service within limited areas of the city. But the most successful of these, the "lads' employment committee," reaches every year only a few hundred poor boys of the better sort. It is estimated that 40,000 boys come to the school-leaving age, 14 years, annually; they represent the juvenile labor problem of the metropolis in its full magnitude and its blackest aspects.

Within the past few months the London council has developed plans for the new service on the basis laid down by the board of trade. Already 20 advisory committees, representing employers, workmen, and the education authorities have been formed to cooperate in this work with the 21 metropolitan labor exchanges pertaining to the system under the board of trade. The teachers send to the committees of their respective districts particulars concerning the children who are about to leave school. The committees, through their relation with the labor exchange, are posted as to employers and vacancies; and thus, it is hoped, the work and the young worker may be brought together.

In London, as in Boston and New York, experience has shown the need of special training for the work of vocational guidance. To meet this need the board of trade and the London council have drawn up a tentative program for professional instruction, and made provision for classes under the conduct of competent and experienced teachers.

THE GRAVER ASPECTS OF THE PROBLEM.

The graver aspects of this social problem were considered in a recent meeting of the North of England Conference, an organization that has led public action in many reform measures. The conference declared emphatically for an extension of the compulsory school period. "This is essential," said a leader of industry, "if the youth of the country is to obtain the minimum standard which a modern state requires * * * and our industrial and commercial system demands."

At present "compulsory education" in England beyond the age of 14 years is secured in a measure by the action of certain private firms which send the young people in their employment to evening classes up to the age of 18 or 19, and pay the fees. This form of "friendly compulsion" is not to be hoped for in the great centers of industry. In them, the only remedy for the evil of premature labor, with its aftermath of incapable and idle men, is legislation that shall raise the age of entry into trade or business to 16 years, with compulsory school attendance up to that age. Makeshift employments for the young would thus be ended; but every effort for such legislation is baffled by the pressure of human necessity, the need of food and shelter, which is the chief cause of the labor of children.

In London, where poverty exists in its greatest extent and complications, the public school is rapidly becoming the chief center of the movement for social and industrial reform. Its agents in this activity are the juvenile labor exchanges, the advisory committees, and the children's care committees. The last-named committees were formed originally to look after necessitous children attending the public schools. In the development of the juvenile employment system, they have been authorized to maintain friendly oversight over boys and girls securing positions through the labor exchanges, up to the age of 18 years.

Already 450 elementary schools are referring children to the labor exchanges through the medium of the advisory committees, and every week the number increases.

V. THE EDUCATIONAL MUSEUM OF THE ST. LOUIS PUBLIC SCHOOLS.

The effectiveness of many elementary school courses may be increased by the liberal use of photographs and other objective material, to the end that the child may be brought into a more nearly immediate contact with reality than can be given him by books. "Objects must always underlie books as the guarantee of knowledge which concerns the material world."—(B. R. Andrews). This is the ground upon which the school museum was introduced into the instructional scheme of the elementary schools of St. Louis.

The collection was begun as an experiment in 1905, at the close of the St. Louis World's Fair, when the board of education acquired from the exhibitors, principally by gift, large quantities of material, the educational value of which did not cease with the termination of the fair itself. Valuable additions have since been made through the courtesy of some of the great museums of the country, of the Jamestown Exposition officials, and of commercial firms, both domestic and foreign. The museum now contains about 6,700 collections of educational material, so classified as to reenforce and accord with the course of study. The subjects in the teaching of which the education museum provides especially useful aids are history, reading, art, geography, nature study, and other elementary sciences. Of the collections on hand, 1,742 are separate entries, the rest being duplicates.

In the collation and presentation of the museum material, a twofold purpose is constantly kept in view: By showing pictures to transport the child, as it were, to the place illustrated, and by showing objects to transport the place to the child. Thus, when the class comes to a study of the cotton States the museum furnishes specimens of the cotton plant in all its various stages, together with pictures showing the manner in which it is gathered, and the products into which it is transformed. A stalk of cotton is passed around the class at the same time the child is looking upon a picture of the white-flecked field. As he handles the cotton boll he is shown pictures of the pickers at work. So the lesson proceeds, description being reenforced by the exhibition of the object described, and this in turn by pictures showing how the crop is raised and how manufactured. An extract from the museum's carefully annotated catalogue, issued for the guidance of teachers, shows the completeness of this teaching process. The following is quoted verbatim, including the parenthetical remarks of explanation:

MATERIAL FOR CLOTHING.

Reference Books: Chisholm—Commercial Geography; Hanan—Textile Fibers of Commerce; Lyde—Man and His Markets; Toothaker—Commercial Raw Materials.

Collection 100: Cotton of the United States.

Fibrous portion of fruit or cotton plant. Cotton most extensively used is that cultivated in the southern part of the United States, from Virginia to Texas.

1. Cotton bolls, Louisiana.
2. Cotton, unginned, Texas.
3. Cotton, ginned, Arkansas and Mexico.
4. Cotton seeds.
5. Cottonseed linters.
6. Miniature cotton bale.

Collection 101: Cotton of other countries.

1. Sea island cotton, West Indies.
2. Peruvian or kidney cotton, Peru.
3. Silk cotton obtained from the cotton tree, Honduras and Venezuela.
4. Pods of cotton tree, Philippine Islands.

Collection 102: Cotton products.

1. Cottonseed oil. Substitute for olive oil; also used for burning in lamps, soap making, and lubricating.
2. Cotton oil cake. Used as cattle food and fertilizer.
3. Cottonseed meal. Ground cottonseed cake.
4. Cottonseed meal. Cattle food.
5. Cottonseed oil soap and soap powder.
6. Cottolene. Cooking fat obtained from cottonseed oil.
7. Varieties of paper made from cotton stalks, carded and heckled, and changed into pulp, from which paper is made.

Collection 113: Manufacture of cotton.

Glass case showing the various stages of manufacture of cotton goods.

Illustrating cotton and cotton industry collections.

104. Stereoscopic views: Cotton industry of various countries.

105. Cotton industry: Fifteen copies of one view—"Cotton pickers in the field."

106. Cotton industry: Fifteen copies of one view—"Cotton on the levee, New Orleans."

For purposes of quick review, as well as for further exposition, this series of collections could be supplemented by the following magic-lantern lesson. Again the quotation is from the museum's catalogue, including the brief descriptions:

COTTON.

1. Map of United States, showing cotton area.
2. Among the cotton negroes in field, Louisiana.
3. Topsy in the cotton, Louisiana. Little colored girl.
4. Home of a cotton picker, Mississippi. One-story cabin.
5. Bringing in the cotton, Storing it in log house, Louisiana.
6. A cotton gin. Exterior of rude house. Boiler under shed.
7. Cotton-press yard. Cotton packed in bales. New Orleans, La.
8. Cotton at railroad station. Packed in bales.
9. Cotton levee. Ready for shipment. Ocean steamer. Mississippi River. New Orleans, La.
10. Cotton factory, Fall River, Mass. Iron mills; steam power.
11. Cotton factory; cotton house, Fall River, Mass.
12. Cotton factory; rear; covered bridge connecting buildings, Fall River, Mass.
13. Cotton factory; carding room (English cards), Fall River, Mass.
14. Cotton factory; carding room, Fall River, Mass.
15. Cotton factory; spinning room, Fall River, Mass.
16. Cotton factory; weaving room, Fall River, Mass.
17. Cotton ready for sale; interior wholesale house, St. Louis, Mo.

If it were considered desirable to use the cotton industry as a point of departure for further lessons in geography, it would be readily possible to continue with lantern lessons on the Southern States; on Egypt, Japan, and other foreign countries where the cotton is raised, as well as on New England, Great Britain, and other manufacturing centers where it is turned into cloth.

The classification scheme of the museum is as follows:

Food Products: Comprising the cereals in the plant and grain and their products. Coffee, tea, sugar, cacao, the cocoanut, the various spices, nuts and fruits, waxes, oils.

Materials for Clothing: The various animal and vegetable fibers of the world and the fabrics made of them.

Other Natural Products: Foreign and domestic woods, rubber, gutta-percha, camphor, cork, coal, etc., their various stages of development and their use; materials for dyeing and tanning; medicinal plants, etc.

Industrial Products: Showing the various processes in the manufacture of industrial products, as paper, ink, pen and pencil, glass, leather, etc.

Animals: Mammals, birds, fishes, reptiles, insects, etc., mounted or in alcohol, together with pictures and charts of specimens.

Plants: Models and colored representations.

Minerals, Rocks, and Ores.

Exhibits: Views, charts, and articles illustrating life and history of other nations.

Apparatus for the Illustration of Physical Geography.

Apparatus for the Illustration of Elementary Physics.

Charts and Photographs for the Illustration of History and Architecture.

Charts Illustrating Astronomy.

Charts Illustrating Physiology.

Classified Collections of Stereoscopic Views and Lantern Slides for the illustration of geography, history, botany, zoology, art, and reading.

A few representative collections, as described in the catalogue, follow:

BIRDS.

Domestic Birds: Thrushes.

Our finest songsters. Inhabit woodlands. Migratory. Great destroyers of insects. Feed mostly on the ground.

Collections of mounted specimens.

479. Wood Thrush. Eastern United States. Winters in Central America. In maples and elms about human dwellings. Nest built in sapling near ground.

480. Hermit Thrush. Eastern North America. Winters in Middle and Southern States. Smallest of thrushes. In dense woods. One of the finest singers.

481. Varied Thrush. Western parts of North America. Food and habits much like those of robin.

482. Robin. Eastern North America to Rocky Mountains. Winters chiefly in Southern States. Best known of thrushes. Feeds on worms and fruits, particularly cherries.

483. Bluebird. United States. Winters in Southern States. Builds about our homes. Decreasing because of persecution by English sparrow.

Foreign birds: Thrushes—Collections of mounted specimens.

575. Black Thrush. (Merula Mandrina.) Europe and Asia. Frequents hedges, thickets, and gardens. Feeds on larvæ, snails, worms, insects, and fruits. Imitates notes of other birds.

576. Rufous-tailed Thrush. (Merula Pallida.) Male and female. Eastern Asia. Good singer.

577. Ground Thrush. (Geocichla Sibirica.) Eastern Asia. Terrestrial. Insectivorous.

578. Rock Thrush. (Rhyacornis Fulgurosa.) Eastern Asia. Builds nests in crevices of rocks. High mountains in summer, lower slopes in winter. Feeds on insects and fruits.

579. White-headed Thrush. (Chimmarrhornis Leucocephalus.) Eastern Asia.

580. Song Thrush. (Stachyrodopis Rubiceps.) Europe and Asia. Woods and meadows, near streams. Excellent singer.

581. Bushcat. (Pratincola Maura.) China and India. Very noisy and active. Inhabits pine forests. Feeds on snails, slugs, and insects.

582. Fruit Thrush. (Pycnonotus Sinessis.) Male and female. Easily tamed.

Foreign Birds: Bulbuls.

Bulbuls, a branch of the thrush family, belong chiefly to India, although some are found in Africa. Inhabit woods, jungles, and gardens. Feed on fruits and seeds, occasionally on insects. Good singers.

Collections.

583. Crested Bulbul. (Otocompsa Emeria.)
584. White-headed Bulbul. (Hypsipetes Leucocephalus.) China and India.
585. Short-winged Bulbul. (Hemixus Ornensis and Canipennis.) China and India.

VOLCANIC ACTION.

Collection 1029: Lava.

Hard, tough, and dark-colored rock, formed of masses issued by eruptions from volcanoes. Articles used by jewelers as lava is a cement of volcanic ash and water. The material which covers Pompeii is largely of this nature. Diabase is underground lava.

All lavas are finely crystalline, due to rapid cooling. (1) Obsidian or volcanic glass; (2) volcanic ash; (3) basalt; (4) anorthite, Mount Vesuvius; (5) pumice, used as polishing material; (6) dendritic lava, so called from tree-like formations on surface; (7) manharite.

Collection 1030: Coarsely crystalline igneous rocks.

Found underground. Crystals are coarse because of slow cooling. (1) Pyroxene; (2) diabase; (3) sahlite, the Tyrol; (4) diorite.

Illustrations of volcanoes—Collections.

1031. Various stereoscopic views illustrating volcanic action.
1032. Volcanic action: Fifteen copies of one stereoscopic view—"Mallibon, Strange River of Fire, St. Vincent, British West Indies."
1033. Volcanic action: Fifteen copies of one stereoscopic view—"Mammoth Crater, St. Vincent, British West Indies."
1034. Volcanic action: Fifteen copies of one stereoscopic view—"Crumbling Ash Deposits, St. Vincent, British West Indies."

Collection 1564: Advanced geography—Volcanic explosions.

Apparatus: Test tube, test tube holder, Bunsen burner or alcohol lamp, cork for test tube. Fill test tube three-quarters full of water. Hold over flame cautiously. (Do this over a newspaper laid on desk and point tube away from pupils.) Note how bubbles form at bottom and water is then thrown out. Then fill test tube half full of water, cork *gently*, and repeat heating, taking care that the tube does not point toward pupils. Note how cork is at last thrown out with great violence—an explosion, in fact. Can pupils explain volcanic explosions? Can they explain the earthquakes that accompany volcanic explosions?

NOTE.—*Great care on the part of the teacher is necessary in this experiment.*

Thirty pictures on volcanoes, earthquakes, and geysers are also given as a lantern-slide lesson.

STEREOSCOPIC VIEWS—MODES OF TRANSPORTATION.

From 6 to 10 views in each collection.

Collection 1467: Transportation on land. Transportation of people; primitive and modern methods.

Collection 1468: Transportation on land. Transportation of freight; primitive and modern methods.

Collection 1469: Transportation by water; primitive and modern methods.
Collection 1470: Transportation, aerial. Methods of aerial transportation.

Twenty-four pictures of modes of travel on land, on water, and in air are also given as a lantern-slide lesson.

A SPECIMEN EXPERIMENT IN PHYSICS.

Collection 1518: How heat is distributed in liquids.

Apparatus: Tubular rectangle of glass, filled with water, a few drops of ink put into opening at top, an alcohol lamp or Bunsen burner. Heat cautiously at one corner over lamp. Notice how ink travels down farther side. How is heat transferred? Why do we heat water at the bottom? How is water heated in the kitchen hot-water tank?

A valuable feature of the school museum is a collection of 174 lantern-slide lessons, 2 of which have been indicated above. Some of the topics with which these deal are descriptive and physical geography, industry, science, history, art, literature, and the ancient world. Regarding these lantern-slide lessons the museum's catalogue says:

Method of picture recitation.

A brief recitation or explanation should accompany each slide shown on the screen. This explanation should be given by the children themselves, so far as it is in any way feasible; it should be very brief, not more than could be written in 3 or 4 lines. A fuller explanation should be deferred. The lantern-slide lesson should not be protracted by lengthy recitations. The time of 20 to 30 minutes should, under no circumstances, be exceeded. Where it seems advisable for a full understanding of the picture on the screen, the teacher of the room or the principal may add a very brief word of further explanation. It is suggested that such questions be asked by the teacher at all points of the lesson as will invite the attention of the children to close observation of the picture before them. It would be a total departure from the intention and purpose of these lessons if they were given in the form of lectures or lengthy explanations. Each lantern-slide lesson should be a series of very brief recitations and the children should be actively engaged in speaking and answering questions while the pictures are shown. They should not be merely passive spectators. The various topics should be assigned beforehand, and a brief explanation, not exceeding 30 words, prepared by each child to whom a topic is assigned. Each recitation should be strictly in reference to the picture on the screen, and not be a rambling talk on some subject which is but indirectly connected with the picture.

In history lessons special care should be taken in this respect. The entire period covered by the lesson is supposed to have been already studied in class, and might be reviewed the day previous to the lantern lesson. When the pictures are before the class the chief attention of teacher and pupils should be directed to the particular incident illustrated and not to the series of events that led up to or followed it.

One room in each school building has been fitted up for these lessons, and the classes go to this room in rotation.

All the material in the museum has solid educational value. There are no objects to arouse mere fickle curiosity; no pictures to incite surface interest. Every entry is designed to convey information, to arouse the children to thought, to awaken their powers of induction. The stimulus afforded the child's mental self-activity, the almost unlimited possibilities of coordination, the aid to the visualization of knowledge—these three factors in the instructional scheme of the St. Louis schools receive large and peculiar contributions from the school museum.

In addition to the teaching material specifically designed for the inspection of school children, the St. Louis School Museum contains the following collections:

(*a*) The Study Exhibit for Teachers, consisting of the current teaching material, arranged for personal inspection.

(*b*) An Educational Exhibit from Foreign Countries, which includes work of pupils in other lands, from the kindergarten through high and normal schools, as well as textbooks, courses of study, reports, photographs, plans and models of school buildings, etc.

(*c*) A Teachers' Library, of some 7,000 volumes. Each teacher is supplied with a catalogue, which is issued independently of the school museum's catalogue.

PROBLEMS OF ADMINISTRATION.

In the administration of school museums, the very small number of American cities which maintain them find serious difficulties. If every single school is to be supplied with an individual museum, including physical apparatus, scientific specimens, and full geographical collections, the cost would be prohibitive, even for an inadequate equipment.

On the other hand, objections were found, equally serious in degree, to the maintenance of a central museum to which the children may be brought on special trips of inspection. In the first place, it has been the experience of the teachers that children can not be taken anywhere out of the schoolroom without their regarding the affair more or less as a pleasure trip, with consequent detrimental effects upon discipline and class work. Moreover, once the children are in the museum, it is found that their attention can not be concentrated upon the collection which it is the teacher's main purpose to show, but on the contrary the great variety of material about them dissipates their attention with the result that their impressions become surfeited and confused. This was demonstrated in the St. Louis schools some time ago, when the children were taken on trips of inspection to the museum, and the next day were called upon for themes upon their experiences. Some remarkable reminiscences developed.

St. Louis has overcome the objections which its school authorities found in both the decentralized and the centralized systems of management. It utilizes the strength and economy of cooperation by establishing a museum in which all the schools have a common interest; and, by sending needed material direct to the teacher requesting it, the difficulties incident to personal visits by the children are obviated. Each week the teachers make requisition for the museum material which they need; that material, and no more, is delivered at their schoolroom door, and taken away again when it has been used. The teachers may learn of the contents of the museum, either from a personal visit to the display room or from the voluminous catalogue issued by the authorities.

Two wagons are kept busy delivering collections. For the expedition of this branch of the museum's work, the city is laid off into five sections, equaling the number of days in the school week, and the schools of each section have a delivery once a week.

The popularity of the school museum may be judged by the fact that some 30,000 of the collections were delivered to 100 of the St. Louis schools last year, in addition to 5,000 reference books. During the first half of the present school year more than 20,000 collections and more than 5,000 reference books have been sent out.

The entire expense of the St. Louis School Museum, including the salaries of 7 persons, wagon hire, buying collection material and books, building display cases—in short, every expense incurred during the 7 years of its existence—has been carried by an appropriation from the school board averaging $7,600 annually. This is an average annual outlay of 9½ cents per pupil enrolled in the St. Louis public schools. The appropriation this year is $10,500.

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